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SYNOPSIS

OF

A COMPLETE GUIDE

TO THE

CONTENTS

OF THE

International Exhibition

OF

1862.

By ROBERT HUNT, F.R.S., F.S.S.,

KEEPER OF MINING RECORDS;

AUTHOR OF THE "SYNOPSIS" AND "HANDBOOK FOR 1851."

Published with the Authority of Her Majesty's Commissioners, and
Sold within the Building by their Sanction.

Third Edition.

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[The Right of Translation is reserved.]

Device of Man in working hath no end,
What thought can think, another thought can mend.

* * * * *

Let this suffice, by this conceive the rest,
He should, he could, he would, he did the best.

ROBERT SOUTHWELL.

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PREFACE.

OWING to the circumstances under which the first edition of the *Synopsis* was produced—and especially owing to the numerous changes which have been made in the arrangements of the Nave and other parts of the Building—there existed many errors, which no one regretted more than myself.

Great care has been taken to render the present edition as correct as possible, and it is hoped that it will be found a convenient guide.

ROBERT HUNT.

INDEX.

BRITISH SIDE.

The Figures refer to the Classes.

FOREIGN SIDE.

- A AUSTRIA.
- B BELGIUM.
- B' BRAZIL.
- F FRANCE.
- G GREECE.
- H HOLLAND.
- H' HANSE TOWNS, MECKLENBURGS, ETC
- S SPAIN.
- S' SWITZERLAND.
- D DENMARK.
- N NORWAY AND SWEDEN.
- R RUSSIA.
- R' ROME.
- I ITALY.
- T TURKEY.
- P PORTUGAL.
- C CHINA AND JAPAN.
- V VENEZUELA AND OTHER STATES.
- Z ZOLLVEREIN.
- U UNITED STATES.

PRINCE ALBERT'S ROAD

ENTRANCE.

REFRESHMENTS

OPEN COURT.

ENTRANCE TO
HORTICULTURAL GARDENS

COLONIES

B
ENTRANCE.

REFRESHMENTS

REFRESHMENTS

REFRESHMENTS

COL.

COL.

FOREIGN

BRITISH

ENTRANCE.
CROMWELL ROAD.

C

SYNOPSIS

OF THE

INTERNATIONAL EXHIBITION, 1862.

There are four principal entrances to the Building devoted to this INTERNATIONAL EXHIBITION.

A.—*The Entrance under the Eastern Dome, in Exhibition Road.*

B.—*The Entrance through the Gardens of the Horticultural Society.*

C.—*The Entrance in the Cromwell Road.*

D.—*The Entrance under the Western Dome, in Prince Albert Road.*

An entrance has been opened at the North end of the Eastern Annex.

Since a visitor may pass into the EXHIBITION by either of those doors,—although door A is the favourite entrance,—it appears necessary to give such descriptions, of the order of arrangement, relatively to the position occupied by him on entering the Building, as may at once guide him to the positions of the several courts. By carefully reading the first pages, and referring to the Plan, the visitor can have no difficulty in finding any group of objects.

A.

THE ENTRANCE UNDER THE EASTERN DOME, EXHIBITION ROAD.

Entering the Exhibition Building from the Exhibition Road, standing on the Dais, and looking down the Nave, the visitor will have on his right

hand that portion of the Transept which is devoted to the COLONIES of Great Britain; and this leads to the Eastern Annex, within which will be found Class I. MINING and METALLURGY. Class II. CHEMISTRY. Class III. FOOD. Class IV. ANIMAL AND VEGETABLE SUBSTANCES USED IN THE ARTS. Class IX. AGRICULTURE. Class VIII. MACHINERY not in motion.

The Transept on the left hand, or south of the reader, is arranged with trophies and examples illustrative of the present state of our Metal Manufactures. The UNITED STATES occupy the Southeast corner of the Building.

Passing down the Nave the following will be the position of the Classes and Countries—those in italics being behind the Courts abutting on the Nave.

LEFT.	RIGHT.
Civil Engineering.	COLONIES.
<i>Hardware.</i>	New South Wales.
<i>Steel.</i>	New Zealand.
<i>Furs.</i>	<i>West Australia</i>
	<i>Natal.</i>
	<i>Queensland.</i>
	<i>Bahamas.</i>
	<i>Victoria.</i>
	<i>South Australia.</i>
	<i>Nova Scotia.</i>
	<i>West Africa.</i>
	Furniture.
	Decoration.
	Music.
	<i>Madagascar.</i>
	<i>Mauritius.</i>
	<i>Siam.</i>
	<i>China and Japan.</i>
	<i>Ionian Islands.</i>
	<i>Channel Islands.</i>
<i>Leather.</i>	
Military Engineering.	
Naval Architecture.	
Glass.	
Pottery.	
Precious Metals.	

THE CENTRAL AVENUE

Divides the BRITISH and FOREIGN Departments.

LEFT.

RIGHT.

Italy.

Rome.

Portugal.

Spain.

FRANCE.

Prussia.

(Zollverein.)

Turkey.

*Brazil.**Greece.**South American States.*

Russia.

Norway and Sweden.

Denmark.

Switzerland.

Holland.

Belgium.

The WESTERN TRANSEPT has on the

LEFT.

RIGHT.

The Zollverein States.

Hanse Towns.

Mecklenburgh.

Austria, which leads to

MACHINERY IN MOTION.

Western Annex.

B.

THE ENTRANCE FROM THE HORTICULTURAL GARDENS.

Passing into the Building from this, the Northern side, the Courts devoted to some of the SOUTH AMERICAN STATES are on the *right hand*, and those in which contributions from CHINA and JAPAN have place, on the *left hand*. BRAZIL and TURKEY occupy the space on the right of this Avenue to the Nave. All on the left hand, or Eastern side, of this division, being British manufactures, while the half of the building on the right hand, or Western side, belongs to the Foreign States.

If the visitors turn up the Nave, Eastward, the arrangement will be that indicated by *reversing* the order given on page 6 of the British side.

If they turn to the right, or proceed Westward, it will be that which has been indicated when the entrance is from the Exhibition Road, door A.

Continuing southward in this — the Central Avenue—the visitor will arrive at the stairs leading to

THE PICTURE GALLERIES.

C.

THE ENTRANCE FROM THE CROMWELL ROAD.

Entering at this end, the visitor will find the stairs, right and left, leading to the PICTURE GALLERIES.

Proceeding onward he will have the BRITISH INDUSTRIES on his *right-hand*, and the FOREIGN PRODUCTIONS on his *left*.

If, on arriving at the centre of this Avenue, which is the centre of the Building, the visitor turns to the right (Eastward), into the British side, he will find the arrangement as described, when he is supposed to enter at door B.

If he turns to the left (Westward) into the Foreign side, the arrangement will be that given on page 7.

D.

THE ENTRANCE UNDER THE WESTERN DOME—
PRINCE ALBERT'S ROAD.

If the visitor enters from Prince Albert's Road, and stands on the Dais under the Western Dome, he will find the ZOLLVEREIN Courts on his right-hand, or South of him, and the AUSTRIAN on his left-hand, or North of him. Through the Northern division of this Transept is the way to the Eastern Annex, devoted to MACHINERY IN MOTION. Advancing up the Nave the position of the Countries and Classes will be learnt by reversing the list already given on pages 6 and 7.

By following the plan upon which this book has been constructed, the visitor may be certain of being led into every division of the Building.

The Ground-floor should first occupy the visitor's attention, and the Galleries should be entered from near the Horticultural Gardens.

ARTICLES BELONGING TO HER MAJESTY
THE QUEEN, EXHIBITED BY PERMIS-
SION OF HER MAJESTY.

(By MESSRS. GARRARD, Class XXXIII., South Court,
Central Division.)

THE KOH-I-NOOR, exhibited as a specimen of dia-
mond-cutting. (Recut since 1851.)

THREE LARGE AND FINE RUBIES, from the Treasury
at Lahore.

AN ORNAMENT for the centre of the table, repre-
senting a covered fountain, designed in the style of
the Palace of the Alhambra.

A JEWELLED AND ENAMELLED CUP, in silver-gilt,
the gift of Her Majesty and the Prince Consort to
their grandchild and godson, the Prince Frederic of
Prussia, on the occasion of his christening.

A TAZZA FORM CUP, presented by Her Majesty
the Queen to the Hereditary Duke of Baden, on the
occasion of his christening.

A RICHLY-CHASED CHRISTENING BOWL, in Renais-
sance style. This cup was presented by H.R.H. the
Princess of Prussia to the daughter of His Excellency
Count Bernsdorf, on the occasion of her christening.

(By MESSRS. HUNT and ROSKELL, Class XXXIII.,
South Court, Central Division).

A VASE, by Antoine Vechte, in oxydized silver,
damascened. Subject: 'The Centaurs and Lapithæ.'

A VASE AND PEDESTAL, by Antoine Vechte, in
oxydized silver, a Marine composition.

THE NAVE.

Gold Pyra-
mid.

On entering, we are first attracted by the Pyramid, giving a visible representation of the Gold exported between 1st October, 1851 and 1861, from Victoria. This amounted to 26,162,432 oz. troy = to 1,793,995 lbs. avoirdupois ; 800 tons 17 cwt. 3 qrs. 7 lbs ; 1492½ cubic feet—having the value of £104,649,728.

Precious
metals.Dressing-
cases.

On the left-hand side is the fine case of Hunt and Roskell, in which will be found beautiful examples of works in the precious metals, and on the right-hand a cabinet of expensive dressing-cases, the combined contribution of Mechi, Asprey, and West. Another case filled with similar works by Asprey stands near it.

The Statues, being labelled, will not require any description.

Majolica
fountain.

In the centre of the Dais is the ST. GEORGE'S FOUNTAIN, executed by Minton & Co. It stands 36 feet high, and is 39 feet in diameter. It was designed and modelled by the late Mr. John Thomas, whose conceptions, to their minutest details, have been admirably carried out. Four winged figures of Victory, holding crowns of laurel, encircle a central pavilion, on the top of which rests the group of St. George and the Dragon. Underneath are a series of smaller fountains, one of which, the Stork, was originally modelled by Mr. Thomas for the Queen's dairy, at Windsor, under the personal superintendence of his Royal Highness the late lamented Prince Consort.

Descending the stairs from the Dais, we have first

The Granite Obelisk from the Cheesewring quarries, which are the property of the Duke of Cornwall : it is a fine example of this stone. The quarries from which this stone is obtained are about six miles from the town of Liskeard in Cornwall. This obelisk possesses some points of interest. His late

Royal Highness the Prince Consort earnestly desired that a monolith, of which this is a model, of the stone obtained from these quarries, should form the memorial of the Great Exhibition of 1851. The Entasis—or graduated swelling of the shaft—and definite proportions have been carefully studied. Exhibition Memorial.

This is balanced by the Drinking Fountain by Earp, enriched with coloured marbles, and gemmed. Drinking fountain.

THE LEATHER TROPHY of Bevington & Sons presents to us every variety of lamb, sheep, kid, calf, cow, ox, goat, horse, and seal skins, with heads, as types of the animals, from which they have been obtained. The various processes of tanning, currying, dressing, and enamelling are illustrated, and, by means of photographs, fairly shown. In this trophy will be found a machine for testing the strength of leather. Leather.

On the opposite side will be found a collection of WOOLLEN GOODS from Barnsley, which may be regarded as the trophy of the staple of Yorkshire. Woollen.

ARMSTRONG'S gun is next exhibited on the one side of the Nave, and on the other the BIRMINGHAM trophy of small arms. Armstrong's Gun.
Small arms.

The model of the Warrior, with a cross-section of this fine iron-plated frigate, will convey to all a very perfect idea of the structure of a class of ships which will in all probability entirely supersede the "wooden walls of Old England." The armour plates with which she is coated will be found in Class I. Model of the Warrior.

The fur trophies of Nicholay & Son, Poland & Son, and Jeffs, exhibit skins of all climates, from the Tropics to the Arctic circle. Furs.

In Nicholay's case will be found specimens of the costly silver, and Arctic, white fox furs. Groups of platipus, ermines, &c. A feature of the collection is a royal tiger freeing itself from the attack and the coils of a large boa-constrictor. On the vertical space is exhibited a fur carpet of unique design and workmanship, with leopard-skin rugs, &c.

A series of astronomical instruments, by Dall-

Telescopes. meyer, follow, with Equatorial Telescopes, many of them having new and exceedingly accurate adjustments.

Iron gates. THE NORWICH GATES (Barnard, Bishop, and Barnards, of Norwich,) consist of a pair of centre and two side gates, supported on four substantial iron piers. These have been designed with a view to combine cast and wrought iron in such a way that the more massive parts, having weight to carry, should be of cast metal, and the lighter framing, with all the ornamental work, forged. In accordance with this idea, the piers and the girders, over the gateways are of cast iron; the gates themselves, the scroll-work over them, and the panels and mouldings of the piers and girders, are of wrought-iron. The only enrichments attempted in the castings are slightly raised patterns in places, and the solid heraldic animals on the piers. The gates are framed of square bars, and filled with devices copied from nature, composed of the vine, hawthorn, ivy, and wild rose. The principal piers are about eighteen feet high, the pedestals of these are three feet square, the shafts in proportion, above which are capitals enriched with foliage in wrought iron, the whole being surmounted by griffins supporting shields. In the shafts are introduced panels of wrought iron, in which the stem and foliage of the oak form a groundwork, which is interlaced by convolvulus, bryony, smilax, periwinkle, ivy, &c. The external piers are of a similar character, but reduced in height. The scrollwork over the central gates is a combination of oak and holly branches, with the old double rose. These surround a shield bearing the arms of Norwich, over which is a knight's helmet. The scrolls over the side gates are composed of branches and flowers of the hawthorn. The whole has been designed and superintended by Mr. Thomas Jekyll. These gates are a fine example of the blacksmith's craft. They are made entirely by the hand, with hammer and pincers, as they would have been 500 years ago.

Crace's Furniture, which follows, has been much Furniture. admired for the taste and elegance displayed.

The Art Union exhibits a series of the choice Art manu- works which have been executed for them; and on factures, the other side of the Nave are some beautiful philosophical instruments, a description of which will be found in *Hunt's Handbook*.

Then we have type illustrations of Class III., *Food*—and of Class IV., *Animal and Vegetable Substances used in Manufactures*.

Cooke & Sons here exhibit astronomical instruments, with clockwork and tools. From the Kew Observatory we have self-registering magneometers, by means of which the variations of the earth's magnetism is recorded by photographic registration.

The next trophy is one dedicated to the most Floating benevolent of uses—a Floating Revolving light, for light. positions where a fixed lighthouse could not be conveniently placed. This is constructed by Wilkins & Co. The improvement in this light consists in constructing the machinery to work beneath the deck of the light-ship instead of in the lantern, as formerly. There is also an advantage in the method of constructing the lamps and the gimble work. The apparatus is arranged for exhibiting three reflectors in a face of three glasses, coloured red, white, and green. With this is associated a fourth order, Holo-photal Light, an arrangement which secures the reflection of all the rays, and an apparatus constructed for exhibiting—a powerful flashing light. There is in addition a “direction light” of recent construction for harbours or railways, seen at a distance of 18 miles: and a 36-inch silver plated parabola reflector for lighthouse purposes, of powerful range, say 25 miles.

Buckingham's large telescope is next in order.

The Trophies devoted to British Porcelain Ma- Porcelain. nufacture will be fully described in connection with the beautiful collections exhibited by Messrs. Copeland, and by Kerr & Co., in the Pottery Class.

Peter's drag will interest a few.

- Obelisk. The Granite obelisk from Scotland, executed by Mr. Sim, of Glasgow, occupying the central place, is a fine example of this stone; and the incised ornaments brought out by the use of burnished gold will be much admired by many. This style of ornamentation is new, upon this material.
- Glass. The triumphs of our Glass Manufactures are many, and Messrs. Osler well illustrate this in their case in this part of the Nave.
- Toys. The Trophy of Toys will be, no doubt, a point of interest to juvenile visitors, and to them everything will be quite intelligible.
- Art manufacture. The Trophy by Messrs. Elkington & Co., is a remarkable combination of art and manufacturing skill. Upon the summit stands the bronze group of Boadicea, in the act of threatening to avenge the insult offered to her daughters by the Romans. This group was modelled by the late Mr. John Thomas—the original marble was executed for Sir M. Peto. The bronze, as referred to above, was exhibited in Paris, 1855, but not before in England.
- Electrotype. At one side the trophy there are placed two statues, which have been produced by means of electro-deposit, and form part of a series which have been presented to the Wellington College; one statue is of General Murray, the other that of Prince Blucher, both by Mr. William Theed; but he admits having adopted the latter from a statue already erected at Berlin. This statue of Blucher was presented to the college by the late Prince Consort. There is another bronze electrotype statue placed at the lower part of the trophy, Malcolm Canmore (or, Caen Mohr), son of Duncan the First; it was modelled by Mr. Theed, by command of his late Royal Highness, for Balmoral, and now exhibited by permission granted previous to the decease of his Royal Highness.
- Upon the base there are exhibited bronze statues, viz.—“Lesbia,” by Cumberworth; “A Daughter of Eve,” by J. Bell; and “The Young Naturalist,” by Henry Weekes, A.R.A.

Above, in centre of the Wellington College statues, there is a suit of armour, copied from one in the Tower of London, and in deposited oxydized metal.

The other side of the trophy has statues of the barons of Magna Charta, viz.:—Langton, Archbishop of Canterbury, by the late John Thomas; the Earl of Norfolk, by T. Thornycroft; and Almeric, master of the Knights Templars, by P. Macdonell, R.A. They are the original models from which others were cast in bronze by Elkington & Co., all of which (18 forming the complete series) were executed, with the exception of Geoffrey of Gloucester, by J. S. Westmacott, since 1851.

There are several pieces, both groups and statuettes, in small bronzes, placed on one side of the trophy; and the principal feature of the other side is a table and mirror, formed from a model of the Alhambra, which was modelled upon the spot, and presented by William Penrose Mark, Esq., British Consul at Malaga, to Messrs. Elkington & Co.

Upon the end glass cases there are busts of most distinguished personages.

We then come to a case remarkable for the value of the productions it contains and for the art displayed. These are the Precious Metals and Jewels exhibited by Harry Emanuel. Precious metals.

On the South side of the Nave here we have a Model of Milan Cathedral, which shows in the most perfect manner the wonderful detail of that splendid pile. Milan Cathedral.

THE CENTRAL AVENUE.

Some very elegant furniture, manufactured by the well-known firms of Trollope & Sons, and Jackson & Graham, are immediately West of the Central Avenue. Furniture.

The Lighthouse, with all the new optical appliances for insuring the reflection of all the light, Lighthouse.

which is 'now placed here, is the work of Chance Brothers.

Porcelain.

Some fine Porcelain groups, exhibited by T. Goode & Co., finish the British Exhibition in this direction.

Design for a fountain.

In the *Central Avenue*, immediately within the entrance from the Horticultural Gardens, is placed the design for a fountain by the late Mr. J. Thomas.

Liverpool imports.

The Cabinet of Imports into Liverpool.—This cabinet is placed in the Central Avenue, near the entrance to the Horticultural Gardens.

The contents consist of specimens of every description of produce with which England is supplied through this important port.

In 1851, Professor Archer commenced a collection, and exhibited it at the Great Exhibition. Mr. Charles Spence has, with great labour, collected all the imports since that time, and he has arranged them in an admirable and a most instructive manner, as is here shown.

Statuary in freestone.

Near this stands a group of figures representing *The Science and Practice of Architecture equally rewarded*, executed by William Brodie, F.S.A., Edinburgh, in the Red Hall Freestone. The stone exhibited is of the most durable character; it keeps its colour, and can be sculptured at a fourth of the expense of any other equally durable material, such as marble or bronze. The exhibitor states that a group was executed in the same material in the Exhibition of 1851, which has been exposed to the weather ever since, and is now as pure in colour and perfect on surface as the day it left the sculptor's studio.

Furs.

A case of furs follows the Liverpool imports, and then we have the BELFAST LINEN TROPHY.

Linen Trophy.

This case contains samples of the linen manufacture in all its stages. There is the flax seed, the fibre in its natural state, and specimens of it in every step during the progress of manufacture up to the finest cambric that has, perhaps, been ever manufactured. The different exhibitors have sent

specimens of their goods to the Belfast Committee, not bearing the marks or names of the several firms; so that this “trophy” of the manufacture of Ulster will show at one glance all the varieties of goods exhibited by the separate manufacturers.

Passing for the moment across the centre of the Building, we have on the other—or southern extension of this avenue—Italy, exhibiting some guns, a billiard-table, and models.—These are followed by

BENSON’S CLOCK. Some curiosity will be excited by examining the works of a clock which are here placed 300 feet distant from the outer dial, which is in the Cromwell Road, while the weights, which weigh several tons, are in the eastern corner of the Exhibition, some 200 feet from the works, with which they are connected by means of pulleys. This necessarily demands considerable motive power, and the application of every possible means for reducing friction, and such appear to have been, with much success, applied. There are five bells which weigh together 50 cwt. The chimes are those of St. Mary’s, Cambridge, re-modelled so that by their intonation they may denote first, second, or third quarters. Benson’s clock.

A Temple with statues,—amongst others, the much-talked-of *tinted Venus*,—comes next in order; Sculpture. and this is followed by a piece of sculpture in basso-relievo, representing Pharaoh and his Host. We are now at the Cromwell Road entrance, and the stairs leading to the PICTURE GALLERIES.

THE FOREIGN DIVISION OF THE NAVE.

ITALY displays a characteristic series, consisting of Venetian Mosaics, vases, and the like. Italy.

FRANCE.—The French exhibit an immense screen in the Nave forming the entrance to French Court, designed by M. Barbezat. Length $148\frac{1}{2}$ feet; breadth $15\frac{1}{2}$ feet at base; height 25 feet (cast iron,) France.

divided into three parts, the centre to contain a piece of plate-glass, manufactured at St. Gobain. It is $10\frac{1}{2}$ feet broad, $16\frac{1}{2}$ feet high. The east and west parts to form entrances. At the sides are lions of natural size, on pedestals of granite. Upon this France hangs her beautiful tapestry, and numerous examples of her art manufactures are spread around.

Prussia and
Zollverein.

PRUSSIA is illustrated in the Nave by a *model of the Exchange at Berlin*, and by many fine *bronzes*. On the edge of the dais stands a *Prussian gun*; in the centre is the *Princess Royal's plate*, and the *porcelain* and earthenware of the King of Prussia. On the Southern side we find *electric and telegraphic instruments*, followed by a fine collection of plate from the Zollverein, and a case of *walking-sticks* from Hamburg. Passing round under the Western Dome, on this side, we have very beautiful examples of *Berlin lace*, *woollens* and *shawls* from Vienna, and *woollen* manufacture from Bohemia.

Belgium.

The *Carved Pulpit* from BELGIUM, which occupies a prominent central position, should be carefully examined, and near this will be found the large *Austrian Bible*. *Cases of lamps, dressing-cases, &c.*, from AUSTRIA follow. These are succeeded by guns, rifles, and the elements of war, balanced by the works of Peace, in the shape of buckhorn ornaments and various groups of statues.

Austria.

BELGIUM places in the Nave a stand illustrating *stearine manufacture*, and some good examples of that *plate-glass* for which that country has been long famed.

Holland.

HOLLAND glories in the brilliant "Star of the South"—a Brazilian diamond found since 1851, the value of which is said to be 1,000,000*l.* sterling.

Switzerland.

SWITZERLAND fixes on her place in the Nave *carved wood* and *musical instruments*.

Denmark.

DENMARK rejoices in *porcelain*.

Norway and
Sweden.

NORWAY AND SWEDEN exhibit here a very fine *anchor*, and *bronze statues*.

Russia.

RUSSIA follows with her wonderful *porphyries*, *nephrite*, and *jasper* worked into vases, &c. The

graphite exhibited from Siberia is in every way remarkable. The caskets with precious stones being a peculiarly Russian manufacture are of considerable interest.

TURKEY then displays her richest embroidery, and Turkey. many splendid examples of Oriental luxury.

This brings us back to the division appropriated to our national industries; and commencing with Music, the following rapid sketch of the general arrangement will be found, it is hoped, useful. Anything approaching to a description of peculiarities must not be looked for in this work. It will be my endeavour to note these in my *Handbook*.

CLASS XVI.,

MUSIC,

Is situated in the NORTHERN COURTS, commencing Pianos. at the corner of the Nave and the Avenue leading to the Horticultural Gardens.

Grand and other *pianos*, by Broadwood, Collard, Hopkinson, Kirkman, Cadby, and several other of the well-known metropolitan manufacturers, are exhibited with all the most recent and approved inventions and modifications, and are to be found not merely within the Court, but dispersed over several parts of the Building.

Harmoniums with and without self-blowing machinery are exhibited by Boosey and Ching, and Chappell. Harmoiumns

Organs find their places in the Gallery of the Eastern Transept, South side; in the Eastern Transept on the North of the Dais, in the Gallery of the Western Dome, and behind the Courts; several chamber and small organs being in this court. Organs.

Military and other brass instruments, *flutes*, *concertinas*, *bagpipes* in metal, for tropical climates, *violins*, *violoncellos*, &c., with "The peri campanula, or fairy bells," are arranged within the twelve groups into which this class is divided. Military brass instruments.

CLASS XXX.

FURNITURE, PAPERHANGING, AND DECORATION.

This Class is situated in and occupies nearly all the North Court, from *Music* to the *Colonies*, between pillars (L 7) and (L 14).

Domestic furniture of every variety is here displayed; and whether we desire to furnish dining, drawing, or bedrooms, every taste—good, and frequently bad—can be gratified.

Buck-horn hall furniture sufficiently shows how fully the public taste is catered to.

The *floors of solid parqueterie* and other adaptations of the same material by Arrowsmith are well deserving attention.

Carved English oak tables and sideboards are numerous, and some of them exhibit much elaboration of detail and great skill.

Carved oak lecterns, reading-desks, and reading-stands for churches and other places, are exhibited.

Church furniture in great variety is in this class.

THE ECCLESIOLOGICAL SOCIETY occupy a Court.

Frontals (the hangings or ornamental panels of an altar) for Clehonger Church, Peterborough Cathedral, and St. Paul's Cathedral, are exhibited.

Rere-dos (the screen at the back of an altar) have three exhibitors.

Incised groups in stone-tympanum, ornamental framing, stalls, mural tablets, &c., for Chichester Cathedral: Encaustic tiles, frescoes, effigies, monuments, and fonts are exhibited by this Society.

A most miscellaneous collection of articles will be found in the several divisions of these courts. Wood-work of every kind finds a place.

Writing desks in various descriptions of wood, jewel-boxes in vast variety, library cabinets in buhl, marqueterie, &c.; arm-chairs of ancient and modern patterns; furniture in carton-pierre, and papier-mâché; cabinets in Pompeian style and in that of

Buck-horn
furniture.

Parqueterie
floors.

Lecterns,
reading
desks, &c.
Church
furniture.
Frontals.

Rere-dos.

Tympanum,
&c.

Encaustic
tiles.

Writing
desks.
Cabinet
marqueterie.

Louis XVI.; chimney-glasses after the style of Louis XIV.; leather carving, &c., are here. Leather carving.

The Sub-Class B, devoted to *paper-hangings and general decoration*, forms a really interesting division. The decorations of walls and ceilings are generally in good taste, and many of them very beautiful. Paper-hangings are most numerous, and in every style and pattern. The imitations of woods and marbles are many of them wonderfully like the originals from which they have been copied, [and Pyrography, or carving upon charred wood, is a promising variety of decoration. Wall and ceiling decoration.
Paper-hangings.
Graining.

Passing across the Eastern end of the Nave, we come into

CLASS X.

CIVIL ENGINEERING AND BUILDING CONTRIVANCES.

Amongst the examples of civil engineering the most remarkable are the following:—

Vignolles' models and drawings of the Tudela and Bilboa railway across the chain of the Cantabrian Pyrenees through the Basque provinces in the North of Spain. Model of Bilboa Railway.

The horizontal scale of this model is $\frac{1}{5000}$, *i.e.* 416 $\frac{2}{3}$ feet to an inch, or about 12 $\frac{2}{3}$ inches to a mile. To bring out the mountains and ravines effectually, the vertical scale is $\frac{1}{2000}$, *i.e.* 166 $\frac{2}{3}$ feet to an inch.

The extent of railway shown on the model is 36 miles, including all the windings of the line along the skirts of the mountains.

The level of the summit which the railway pierces is 2163 feet above the sea, being probably the lowest pass in all the Pyrenean range. Most of the scarps and ravines are very steep, and in places from 500 to 700 feet, full of perpendicular rock, with two waterfalls of those heights respectively.

It was through the ravines and narrow valleys of the river Bayas and its affluents, between the Gujuli summit and Pobes, that bodies of the Anglo-

Spanish army marched, immediately previous to the battle of Vittoria, in 1813, and thereby turned the right wing of the French, cutting off their intended retreat upon San Sebastian, and forcing them back from Vittoria upon Pamplona. The Techas pass and ravine is adjacent to the villages of Subijana, Morillas, and of Pobes (all shown on the model), where were the head-quarters of Wellington and his staff, the night before the battle. The passes from the Bayas valley to the plains of Vittoria, by Vittoriana on the north, and by Nanclares on the south, through which several of the divisions of the English army defiled to the attack, are also indicated.

A more detailed account of this remarkable work will appear in the *Handbook to the Exhibition*.

Amongst the models of especial interest will be found the following :—

- | | |
|---|---|
| Boyne Viaduct. | The Viaduct over the Boyne at Drogheda on the Dublin and Belfast Junction Railway. Model of the proposed suspension bridge at Clifton. Railway viaduct over the river Beelap in Westmoreland, and a portion of the Crumlin viaduct. |
| Crumlin Viaduct. | |
| Bridge across the Wye. | Brunel's bridges, namely, the Albert bridge on the Cornwall line at Saltash, and his bridge across the Wye at Chepstow, on the South Wales Railway, are interesting. |
| Bazalgette's Sewers and Roadway. | Bazalgette's drawings and models connected with the main drainage of the metropolis, especially the sewers and roadway over the river Lee at Old Ford, have, at present, much interest. |
| Viaducts of the Lune. Kennedy's Bridge. Hartlepool Harbour, &c. | The Viaduct across the valley of the Lune, by Errington; Colonel Kennedy's bridge for railways; West Hartlepool harbour and docks; Rennie's floating dock, with many others, will command attention. |
| Gas meters. | In this Court and on the eastern side of this transept will be found several kinds of gas meters. Glover & Co. exhibit their patent dry gas meters and instruments for measurement of gas, and the illuminating power of light; also the model gas-holders deposited at the Exchequer, in compliance with the rules of the Gas Act. Cookey & Sons, and others |
| Photometers. | |

exhibit gasometers, gas-retorts, valves, regulators, and gas-apparatus in general. The Hon. Major Fitzmaurice exhibits his apparatus for making oil and coal-gas. Fitzmaurice's gas apparatus.

Bricks and tiles are largely exhibited. The Court devoted to the display of plain and encaustic tiles and tesserae by Maw, of Brosely, well deserves a visit. It may be regarded as a series of architectural productions, illustrating the clay manufactures of the Shropshire coalfield. Bricks and tiles.
Shropshire clay works. ?

There are several exhibitors of terra-cotta for architectural purposes, the fine effects of which may be well seen in the arcades of the Horticultural Gardens. Terra-cotta.

In the courts on the eastern side of the Eastern Transept are many productions of great beauty belonging to this class. There has been and is some considerable difficulty in separating the class from the works of art belonging to Class XXXI. All that relates to metal work will, however, be referred to the latter class.

The Westminster Marble Company exhibit here a fine chimney-piece: there is another with room and cornice decoration executed by J. Thomas, for her Majesty the Queen. The porch for Sherborne Church, by Poole & Son, from a design by Slater, and the pulpit by Earp, from Street's design, are fine works. The fountains executed by Earp from Nesfield's design is no less so. The drinking-fountain in Aberdeen granite, by Robertson and Hunter, and the examples of Serpentine sent by the Lizard Marble Company, have a place here; but these must be examined in connection with the examples of these stones in Class I. Sherborne porch, pulpit, fountain.
Granite fountain.
Serpentine.

Magnus's enamelled slate bath and wall decoration are also in this group. The council of the Architectural museum contribute architectural and decorative carvings in stone and wood, and there are indeed a fine collection of objects shown for architectural beauty. Enamelled slate.

The Sub-Class B, sanitary improvements and constructions, embracing drainage apparatus, venti- Sanitary improvements.

Filters.

lators, and the like, are good. We have here charcoal filters, silicated carbon filters, and Spencer's filters for purifying water with magnetic oxide of iron. This last involves some peculiar properties which demand a most searching investigation, as pointing to some remarkable phenomena.

Stone pre-servers.

Bitumen pipes.

In addition to the above, there will be found in this class many examples of artificial stones and stone-preserving preparations, telegraphic appliances, &c. The bitumenized water, gas, and drainage pipes appear to be excellent things, provided by slow oxidation the bitumen does not suffer decomposition.

CLASS XI.

Is devoted to

MILITARY ENGINEERING, ARMOUR and ACCOUTREMENTS, ORDNANCE and SMALL ARMS,

which may be entered from the Nave between the pillars (K 7) and (K 9), or from Class X. between (K 7) and (G 7).

The advances which have been made in the manufactures comprehended within this class, have been as great as, if not greater than, in any class of British industries. It will consequently be visited and inspected with great interest.

Armstrong Guns.

The 100-pounders, muzzle and breech-loading guns, with their projectiles, constructed by Sir Wm. Armstrong, will claim much attention at this time, when the questions of offensive weapons and defensive armour are rife. The beautifully mounted gun is, deservedly, a trophy—dedicated to Peace—and protecting those industries which flourish only in the sunshine of her smiles. In the centre of this court the Royal Gun Factory have a trophy showing the cylinders, &c., of Armstrong guns in various stages, surmounted by beautiful 6-pound and 12-pound weapons. Sir W. Armstrong's fuzes should be examined; they are choice examples of simplicity

combined with great ingenuity in their mechanical arrangements.

Whitworth's rifled ordnance is of equal interest, and whether the power of the guns, the beauty of their construction, or the perfection of workmanship is considered, these weapons cannot fail to attract the public, and to convey much information to the experienced workman. Whitworth's guns.

The Mersey Steel and Iron Company have their monster 600-pounder gun, with shot and shell, and the beautiful Field-piece. Mersey Com-
pany's gun,
&c.

The Secretary of State for War has permitted the Exhibition of all the more recent improvements in our weapons of offence and defence. These will be found to be an extraordinary gathering. Mallet's monster shell, 36 inches in diameter, and weighing 1 ton 7 cwt., which is intended to transport a mine of gunpowder—its bursting charge being 400lbs.—into an enemy's fort. One of these shells, without a bursting charge, weighing 2,550 lbs., was thrown on Woolwich Marshes a horizontal range of upwards of a mile and a half to a height of probably three quarters of a mile; and falling, it penetrated the dry earth of the Woolwich range, to a depth of more than eighteen feet. No bomb-proof arch (so called) exists capable of resisting the tremendous fall of such masses. Mallet's shell.

The Royal Laboratory contributes cartridges, fuzes, and sundry projectiles, while Mr. Abel, the chemist, exhibits his fuzes which are to be fired by magneto-electricity. A trial of these fuzes and the magneto-electric apparatus was made in the autumn of 1861 by one of Mr. Abel's assistants and myself, on the wet ground of the Falmouth New Docks, with the most satisfactory results. Fuzes.

Electrical
Fuzes.

The gun factories are illustrated by a great variety of rifled ordnance shown in all their details, with the machines and tools used in their construction.

The Enfield rifle in every stage of its manufacture may be seen. The number of exhibitors who in the manufacture of rifles stand in full competition with the Royal Small Arms Factory are numerous, Enfield rifle.

and more beautiful collections of rifles and fowling-pieces, breach and muzzle loading, were never brought together.

Tents.

Major Rhodes's tent, and several others, show what improvements have been introduced.

Some accoutrements, though the collection is very imperfect, will be found in this class.

Bridges.

Rolling bridges,—especially one invented by Captain Donelly,—are exceedingly ingenious. Captain

Pontoons.

Fowke's collapsing canvas boat-pontoon has been proved to be of great value. Scaling ladders and several similar appliances of war are here.

The War Department contributes models and plans of fortifications, barracks, and hospitals.

Ambulances, waggon, and carriages of all the kinds employed by our army, are exhibited.

Photo-zincography.

Amongst this formidable gathering we find one invention which certainly belongs rather to the arts of peace than of war. The photo-zincography of Colonel Sir Henry James, R.E., which has been successfully employed in copying the Domesday Book and other important records, finds its place here. The process is given in the "*Handbook*."

CLASS XII.

NAVAL ARCHITECTURE AND SHIPS' TACKLE

Immediately follows the class just described. It abuts on the Nave, between pillars (K 10) and (K 11) extending round behind Class X.

Model of Northumberland. Admiralty models.

The model of the 'Northumberland' is certainly the finest thing in this court. The Lords of the Admiralty exhibit a series of models showing the progress of naval architecture since 1514. This series presents many interesting and instructive features. There are many other models, some—this includes the 'Warrior' in the Nave—by the Thames Ironworks and Shipbuilding Company, exhibiting fine forms and much beauty of construction.

Mr. John Scott Russell exhibits models in illustration of his wave principle, showing, indeed, models of all the ships built upon this principle since 1851. Here are also models of the principal iron ships built since 1853, and illustrations of Thomson's boat-building by machinery.

Models of
wave-line
ships.

Boat-building
by machinery

The Commissioners of Irish Lights send a model of Fastnet Light, off Cape Clear, on the south of Ireland. The Commissioners of Northern Lights send lighthouse apparatus and models. The Corporation of the Trinity House in the same manner illustrate the fine works under their charge.

Lighthouses.

Here will be found lifeboats and unsinkable ships, by the National Life-Boat Association and others. Mechanical motions of all kinds are applied to propellers, and enemies are swept from the decks of ships by machinery. Amongst ship's tackle and rigging we find anchors and buoys, steering apparatus, life-preservers, and plans for communicating with a stranded ship. Danby's, Reed's, Porter's, and Trotman's anchors are here. A sphereometer for facilitating Great Circle sailing will interest many. It is a curious fact that man should have waited for four thousand years to have discovered that the nearest line between any two places on a Globe was the great circle which connected them.

Lifeboats.

Anchors.
Life-pre-
servers.

Great Circle
sailing.

Cunningham's topsails, which are reefed on rollers, and Clifford's boat-lowering apparatus will interest many.

CLASS XXXIV.

GLASS FOR DECORATIVE AND HOUSEHOLD PURPOSES.

This class follows immediately west of Naval Architecture, between the pillars in the Nave (K 11) and (K 13).

The all-distinguishing feature of this section is the chandelier of Messrs. Defries. It stands 22 feet high, and is 14 feet diameter at the base; some of the prisms are above 3 feet in length, and the cut glass columns much longer. There are many fine ex-

Defries'
Chandelier.

Candelabra.

amples of this material, especially the gigantic candelabra and other specimens of glass manufacture by Osler, on the Eastern Dais and in the Nave—with fine collections from Copeland, Pellatt, Phillips, and others.

Of *Glass for household use and fancy purposes*,—there are only forty-one exhibitors, but these are the best houses in the trade, and the exhibition of glass is consequently of a high character.

Beyond the articles mentioned, there remains but little to notice. Photographic portraiture, for the interior of glass vases, is a novelty, and the Anglo-Venetian silvered mirror a rather interesting revival.

Circular window in Nave.

Of stained-glass windows there are a tolerably large display. The windows terminating the Nave east and west are by Hartley & Co., of Sunderland.

In the North East Transept—

Centre window is for Doncaster, by Hardman of Birmingham.

Right-hand window.—"The Robin Hood window," by Chance Brothers.

Left-hand window.—Scripture subject, by the same.

In the North West Transept—

Centre window, for Worcester Cathedral, by Hardman.

Right-hand window.—Ecclesiastical subject, by Heaton, Butler, and Bayne.

Left-hand window, by Holland of Warwick.

Coloured windows in the Southern Gallery.

Several very fine windows of stained glass, and painted, are placed in the Southern Gallery around the entrance to the Picture Galleries. Space will not admit of a detailed description of these, but they will be found deserving of an attentive examination.

From Glass we pass naturally on to Pottery.

CLASS XXXV.

POTTERY.

This is situated between pillars in the Nave (K 13) and (K 16), which is at the bottom of the stairs leading to the South Central Gallery.

Binns & Kerr, of Worcester, have in the Nave a portion of the service which they have lately executed for Her Majesty the Queen. The service is executed in enamel in monochrome, in the style of the enamels of Limoge, but on a turquoise ground. In the part executed, they have not been allowed any great scope for freedom of design in form; they have, however, introduced one novelty in the shape of the great dishes, &c., which are all turned over on the edges. This allows the ornament to be seen when the dish is dressed.

In the part of the service already executed, there are eighty plates, all different in design. The arrangement consists of one principal group in a panel to four subordinate ones—all having some relation to the principal one. Thus, if the chief group is a Bacchanalian subject, the others have trophies, &c., of a similar character. The grape baskets, wine coolers, compotees, &c., are all different in design, as is also the gilding on the borders of the plates.

The trades mark on the back was designed by Mr. Digby Wyatt, and contains the principal names in the history of European pottery.

In other cases, in the Porcelain Court, this firm exhibits specimens of its enamels on dark blue. This is the colour on which the style was first introduced, and which was liberally patronized by Her Majesty and the late Prince Consort.

They also exhibit Raphael porcelain, so called from the style of colouring. The treatment of the colours is something quite new in porcelain, and the peculiar tone of the body has enabled them to harmonize the colours in an unusual manner. The body of this ware is an Ivory porcelain, a speciality of Worcester.

Parian
statuary.
Porcelain.

The cases of Sir J. Duke and of Wedgwood,—which are along the Nave,—are filled with illustrations of their peculiar manufactures. Parian or statuary porcelain, the very elegant Wedgwood ware, and the finest examples of English porcelain will be found in these cases, Sir J. Duke adding modern Palissy ware, examples of Limoge enamels, and Majolica.

Tiles and
tesserae.

Mr. Copeland's examples of ceramic manufacture are of the highest class, and they comprehend many novelties in design and colours. This beautiful series is on the side of the Central Avenue, behind the class devoted to the Precious Metals. Near this, Minton & Co. have formed a court of tiles and tesserae, which is most handsomely decorated with Parian statuettes and ornaments, Majolica vases and figures, and their finest manufacture in earthenware, china, &c.

Terra-cotta.

Blashfield has a stand near the Nave, filled with fine examples of Terra-cotta.

Jet and jasper
ware.

Davenport, Banks & Co. exhibit jet, jasper, and antique wares, most of them very beautiful.

Rose & Co. have several cases well filled with the best examples of their well-known wares. Several firms having their works in the potteries and elsewhere, exhibit their choice productions, every one of which appears to deserve some special notice, and which indeed they must receive in another work.

Stoneware.

The Lambeth Stoneware is largely exhibited, and the chemical apparatus and vessels exhibited by Doulton and Watts, are curious examples of the potter's art.

Since 1851, no branch of art manufacture has advanced more decidedly than pottery. The liberal spirit manifested by the potters in encouraging art schools and in introducing the highest art-workmen to the potteries, has led to this great result. Perhaps there is no more complete illustration of this than the presentation pieces in ceramic statuary, exhibited by the Crystal Palace Art Union, and the selection made by Battam & Sons.

Mr. Henry Cole's use of earthenware pressed

mosaics, for the exterior decoration of buildings, promises to introduce a new style of decoration into English architecture. Pressed
mosaics.

CLASS XXXIII.

PRECIOUS METALS AND THEIR IMITATIONS, AND JEWELLERY.

This always attractive Class finds its place under the Eastern Dome, in the Nave, and along the Centre Avenue.

Hunt and Roskell are large exhibitors. Many of the works exhibited by this firm are testimonials possessing great public interest in addition to their artistic merits. Her Majesty the Queen has graciously permitted the exhibition of two vases by Antoine Vechte, and his shield, a repoussé work in silver and iron, which was exhibited in a crude form in 1851, but is now complete. Vases.
Shield.

The Outram and Packington Shields, the Kean Testimonial, and other works, by H. H. Armstead. A group of Russian peasants in silver, executed for the Count Orloff Davidoff, is a fine work, highly truthful and characteristic and novel to this country. This firm also exhibits some fine jewels, among which are the Nassuck and Arcot diamonds belonging to the Marquis of Westminster. The Nassuck was cut by them; its weight is 340 grains—the Arcot round stone weighing 125 grains, and the drops weighing $223\frac{1}{2}$ grains. Testimonials.
Jewels.

This firm, in Class VII., shows the process of cutting and polishing diamonds, an art principally confined to Holland, and but little understood in England. Diamond-cutting.

Harry Emanuel, in his case in the Nave, exhibits a cup carved from a solid piece of topaz, mounted in beaten gold; an ivory statuette, remarkable alike for its size and execution, and extraordinary sets of opals, diamonds, and jewellery in ivory and gold. Ivory
statuette.

E. and E. Emanuel are exhibitors in this Class of fine works of art in the precious metals.

Garrard's plate and jewellery will attract much

Koh-i-noor.

attention, containing as it does many of the finest racing plates given of late years. Here are the Koh-i-noor and the Queen's jewels, mentioned in a former page.

Silver table, dish, and vase.

Messrs. Elkington exhibit a silver repoussé table, which is a work in the highest style of art; also a silver dish and vase designed by A. Willms. Indian vases in oxidised silver, and a novel enamelled service.

Diamonds, emeralds, &c.

C. T. Hancock displays, in addition to his poetic groups in silver designed and modelled by Signor Monti, a fine collection of gems—emeralds, opals, diamonds, and pearls of the finest character. Mr. Tennant's collection also deserves close attention.

The bog oak ornaments;—the corals exhibited by Phillips;—the Scottish jewellery;—the sacramental plate, and numerous remarkable works, will occasion the visitor to linger amidst this collection of works in the precious metals.

THE PROCESS COURT

is situated behind the Precious Metals Court and between that and the Hardware Class. In it are exhibited many processes of considerable interest.

In connection with the manufacture of needles Messrs. H. Milward and Sons are here exhibitors. Needles for sewing-machines are a new trade, and, since 1851, of these this firm appears to be large manufacturers. Sewing-machines in action, medal striking, block printing, weaving, pencil making, clay compressing, tobacco-pipe manufactory, type composing and distributing, engraving and lithographic printing are all here.

CLASS XXXI.

IRON AND GENERAL HARDWARE.

This class extends over nearly the whole space beyond the classes already named, and it occupies the Eastern Transept.

In the Sheffield Court, which adjoins the Eastern

Transept, will be found all the great makers of cutlery and steel goods. There are steel cranks and piston-rods, railway springs, steel tyres, ingots of steel, cast-steel disc wheels, and "scalping knives." The show of steel grates, stoves, fenders, and fire-iron ornaments is beautiful in itself, from its artistic and manufacturing merits, and made still more attractive from the admirable and most tasteful manner in which the exhibitors have set their goods off.

The collection of ornamental grates and fire-irons, by Hoole, and kitcheners, by Longden and Co., may be especially named. A collection of kitchen ranges, stoves, and cooking apparatus is exhibited by the best makers in the south-west corner of the court.

Collections of files, steel-edge tools, joiners' tools, &c., show the character of Sheffield goods. Steel files especially are of the finest manufacture.

Naylor, Vickers & Co., in addition to their specimens of steel bells, exhibit tyres, axles, and pinions for rolling-mills. Joseph Rodgers & Sons have a collection of fine cutlery, as have also Wilkinson & Sons, and Brookes & Crookes. The Wolverhampton lock trade is well represented, by Chubb, Hobbs, Price, Aubin, and many others. The General Iron Foundry Company show some fine specimens of ornamental castings in iron, of door-knockers, handles, banisters, &c.

The Birmingham Court contains chiefly stamped brass goods and small brass works, as door-handles, bell-handles, &c. The most prominent exhibitors being:—Winfield, R. W. & Son., whose bedsteads, chandeliers, and ornamental brass furniture is well known.

Joseph Steer, who exhibits specimens of curtain-bands, rings, cornice ends, brackets, and cornices, all in stamped brass work. Cartwright, Sambridge & Knight, exhibiting chandeliers, candlesticks, and worked brass ornaments. A collection of dish-covers, trays, and vases, is exhibited in the lower part of the court, by Samuel Tonks. George Dowler

Steel goods

Grates.

Steel bells.

Cutlery.

Locks.

Door-knockers.

Birmingham Court.

Brass goods.

Small wares. exhibits a fine collection of pocket compasses, letter-scales, table-bells, measuring tapes, and sundry small articles, in brass and bronze. Samuel Robotham: wire-work, flower-guards, enamelled bird-cages, fancy castings, railings, palisades, &c. Day and Millward are exhibitors of the weighing-machines made by them and most generally in use.

Weighing-machines.

Fancy castings.

Gates.

In addition to these, Roberts, of Northampton, has a set of fancy castings of garden tables and chairs, and umbrella stands. W. Baily & Sons, a pair of gates, manufactured by them, chiefly wrought iron, and Kennard's gates of cast iron, made for Spain. The ornaments represent the chief fruits of Spain. This sketch will give but an imperfect idea of a class which is crowded with articles of utility, and many of them remarkable for elegance.

Stable fittings.

Stable fittings, in great variety, will be found on the southern extremity of the court.

CLASS XXXII.

STEEL CUTLERY AND EDGE TOOLS,

Is situated at the western side of the Eastern Transept. Although a separate class is assigned for this, it is so mixed up with the former class, that it is not possible to draw any exact line between them. Steel in its crude state, and in every form of manufacture, has a place here.

Weldless tyres—rolled steel of the largest kinds—have place beside needles and fish-hooks, steel pens, wire, and steel toys.

The cutlery is of the most varied kind, showing every form of edge tool or cutting instrument made for home consumption or for exportation. To describe these would be to reprint the catalogue, to which work, therefore, the inquirer is referred.

An interesting machine, by Messrs. Greenwood & Bailey, for testing steel by crushing, pulling, and rolling, is a prominent feature in this court.

CLASS XXV.

SKINS, FURS, FEATHERS, AND HAIR.

This class is situated towards the south-eastern corner of the British Courts, having an opening upon the Eastern Transept.

Here are a great variety of the skins, dressed and Furs. otherwise, of wild animals, many of them manufactured into articles of clothing, rugs, &c.

Several fine examples of feathers, raw and dressed, Feathers. are exhibited.

Human hair dyed, wigs, partings, and scalps ; Hair. horse-hair ornaments ; hair-flowers and various ornaments, showing the facility with which they can be constructed ; and every variety of brush will be found in this class.

CLASS XXVI.

LEATHER—INCLUDING SADDLERY AND HARNESS—

Is immediately connected with the class devoted to Rare skins, feathers, and hair. In addition to the leathers Leathers. in ordinary use, Messrs. Hepburn & Sons exhibit specimens of walrus, hippopotamus, and elephant hide. Leather bands for machinery, hydraulic leather and hose pipe, fire-buckets, &c., are exhibited by the same firm, by Norris & Co., and by others.

Leather, showing the effects of colour and ornament as applicable for the covering of walls, screens, Coloured Leathers. furniture, and general decoration, by Joseph George, pleasingly illustrates this application.

The Sub-Class B—saddlery and harness—includes Saddlery. every variety of saddles, harness, and saddler's iron- Harness. mongery, safety collars, and collars for preventing crib-biting.

As this collection has but a special attraction, and but little explanation is required to render it intelligible to all, we pass on to the consideration of other classes, observing, however, that the specimens of tanning are of much interest.

CLASS VI.

CARRIAGES NOT CONNECTED WITH RAIL OR TRAM
ROADS.

This class is situated against the southern wall of the building, under the Picture Galleries, along the Cromwell Road.

This section includes every possible variety of carriage, from a Bath chair to a velocipede. From a four-in-hand to a perambulator or a self-propelling bathing-machine. There are barouches, landaus, pony-carriages, single and double broughams, broughams and Eugenie's, sociables, and phaetons, under 7 cwt., Stanhopes, waggonettes, "diorophas," and one "a barouche, sociable, coach, and landau" all in one. Among the novelties is a cart to form either a cart or sleigh, and a plan for the prevention of accidents to carters. Evans, of Liverpool, shows an improved Hansom cabriolet to accommodate two persons; a very handsome Fitzroy phaeton comes from Northampton, constructed with malleable steel and wheels of hickory. Mulliner, of Leamington, has a four-wheel dog-cart, which folds open and forms a waggonette. Shillibeer exhibits an improved omnibus, described as a *vis-à-vis* omnibus, with separate seats inside, the outside seats on the roof and box being reached from the interior. Of this the inventor says: "Many persons, females as well as males, who never venture to ride outside the present carriages, on account of the difficulty in reaching the seats, will now be enabled to travel outside by this patent omnibus, with perfect security, comfort, and propriety." Starey, of Nottingham, shows a landau with flat fall of head, with elastic springs and noiseless wheels in chain tyres; Vezey, of Long Acre, sends a carriage with noiseless springs in india-rubber bearings.

"Amemptor."

Kesterton has a rather elegant carriage, to which he gives the name of "The Amemptor." A complete close or open carriage, suitable for either summer or winter, very roomy and sufficiently light to be used with one horse.

Windover, of Huntingdon, has an entirely new style of carriage; it is called Windover's registered "Tessatempora," being the only convertible carriage which can be adapted for the four seasons. "Tessatempora."

Hooper & Co. also exhibit a considerable variety of carriages: a long list lies before me, with town coaches, landaus, and chariots at one end, and dog-carts and sleighs at the other. From this hasty sketch it will be evident how completely the 116 exhibitors in this class have catered for the taste and comfort of their customers.

By an awkward arrangement arising from the late arrival of the collection from the UNITED STATES, it occupies the south-east corner of the Building, and may therefore be now most conveniently examined.

UNITED STATES, AMERICA.

The goods from the United States are generally of the plain and useful character, but some of them are likely to prove of much value.

A Steam Fire-engine, by Lee and Sayward, of New York, is of the description chiefly used by the fire brigades of the United States, and is employed by about twenty-five or thirty of the New York brigade. It is said to throw water in seven minutes after the fire is lighted in the boiler, and to produce in a short time some powerful effects. Fire-engine.

Combination Press and Compress, by J. J. Eckel, of New York, is employed to compress cotton, oils, tallow, hay, dry goods, &c. It is of most ingenious construction; and, according to the testimonials of those who have employed the press, it economises labour and produces the best results. Press.

There is a good collection of MINERALS, by Dr. Feuchtwanger, chiefly the ores from Lake Superior, and zinc from New Jersey. Gold and Silver ores from California, collected by Mr. Claudet, are exhibited. Minerals.

Our space will not admit of description here of a SET OF MOWING AND REAPING MACHINES AND SELF RAKERS, improved and made by the Exhibitor, Dr. W. Aywood; or of the improved FLAX AND FIBRE

Agricultural
Machines.

MACHINES, by Standford and Mallary, New York ; or of SEWING MACHINES, shown by the chief manufacturers in New York.

The EARTH ELEVATOR, by Levi A. Bardsley, is a set of spades, which is worked by horse power, to dig out and throw up stuff from deep ditches, &c., and is much more efficient than working by hand, being able to take five or six times the quantity.

Hay or straw elevators are ingenious arrangements to work a large fork or two prongs, so as to unload hay from waggons into ricks or barns, taking up half a truss at a time.

A CASE OF HAY, MANURE, AND GARDEN FORKS, by Batchelor & Sons, Boston, shows greatly improved manufacture.

Oils.

SAMPLES OF OILS, by F. S. Pease, Buffalo, New York, particularly adapted by their purity for sewing machines, gun locks, and machinery of all kinds, are now of much interest.

Music.

TWO GRAND and TWO SQUARE PIANOS, by Stienway & Sons, are exhibited : the make is said to be first-class and the tone excellent. Our American brethren contribute HARMONIUMS, &c., AMERICAN CLOCKS AND CLOCKWORKS, ROPE AND COTTON BANDING MACHINES, with many other ingenious and interesting examples of their industries.

Carriages.

CARRIAGES, by Brewster & Co., show extreme lightness ; one of them, a four-wheeled phaeton, will carry four or five persons over the roughest roads, and weighs only 175 lbs.

BOOT AND SHOE SEWING MACHINE, by Bigelow, Boston, to cut, shape, and sew boots, shoes, &c., by machinery alone, is an advance. The SEWING MACHINES are excellent.

EASTERN TRANSEPT.

Coalbrookdale gates.

The Coalbrook Dale Company occupy with their numerous and remarkable productions, a considerable space at this, the southern end of the transept. Their gates of bronzed iron have the novel feature of enamelled iron pillars, protected by a skilfully

designed trellis-work and foliage in bronze. They have also a fountain, modelled; on the type of the celebrated Tomb of the Medici by Michael Angelo, which is as remarkable an example of art in iron as was ever produced. A colossal statue of Oliver Cromwell surmounts the whole; beneath him on a scroll is a copy of the Protector's handwriting. On either side repose Peace and War, and from the mouths of the lions on which they rest the streams of water are intended to flow. The exhibitors state that the necessities of their position have compelled them to place this large work somewhat lower than it should be. This company also exhibit, in the form of drinking fountains, vases, &c., numerous fine examples of metal castings.

The Crom-
well
fountain.

Bessemer steel is fully illustrated in a large central case in this transept. The process, as the name implies, was invented by Mr. Bessemer; it consists essentially in forcing jets of air through fluid iron; the consequence of which is, the production of a greatly increased temperature, and violent ebullition. During this action, the oxygen of the air combines with the oxidizable agents present, and according to the degree of decarbonization permitted, which can be regulated to great nicety, any quality of metal can be produced. This process is now largely used in this country, and in the great iron-making districts of the Continent.

Bessemer's
steel.

There is a crank shaft of a 50-horse engine in one piece, with piston rods for engines of from 50 to 250 horse-power; a powerful screw of a fly press used in the Mint; with a circular saw made from one disc of steel, over 7 ft. in diameter, with teeth of 10 in. in length.

Near this is a large class trophy to which Baily and Sons, Feetham & Co., Hart and Sons, and Benham, contribute. This is formed of rare examples of (the so-called) Renaissance metal work; that is, restorations of the style which prevailed in the time of Raphael, who endeavoured to graft the freedom of the Gothic style on the severer classic forms of Romans. Gathered together in picturesque

Metal-work
trophy.

groupings, here will be found nearly every variety of church furniture and decoration, together with articles for domestic use; others again which are devoted to ceremonial appliances.

Warner's
bells.

Not far distant will be seen the set of bells cast by J. Warner and Sons. These are so arranged that any one ignorant of music may chime them; and then we have

Dent's Clock.

A TURRET CLOCK, by Dent, striking the hours on a bell weighing nearly four tons, is a fine work.

Steel bells.

Immediately connected with these examples of metal work, are the STEEL BELLS of Naylor, Vickers & Co.

Hardman's
mediæval
court.

MESSRS. HARDMAN & Co. and HART & Co. have fitted up, with much elegance, courts, under the Gallery, which they have devoted to their own peculiar mediæval manufactures. They contain illustrations of the decorative arts of the period included between the 12th and 16th centuries; a period marked by the taking of Rome by the Barbarians, and the sacking of Constantinople by Mahomed II., when the orientalism of the Byzantine empire became blended with the dying out of the Roman styles.

Sculpture.

'Niello.'

Chalices.

Ciboria.

Monumental
brasses.

Screen for
Hereford
Cathedral.

Sculptures in alabaster and marbles, enamelled metal works of various kinds, good examples of '*Niello*,' that is, of engraving upon gold or silver, and subsequently filling in the engraved lines, with a composition of a black colour, usually an alloy of lead, silver, copper, and sulphur. Chalices of various descriptions. Several examples of the Ciborium or 'Sacrament House,' (a pyramidal structure, richly adorned, in which the Host is kept). Flagons, drinking cups, and many objects of an allied character; monumental brasses, memorial tablets, inlaid and otherwise ornamented, serve to render this little court a study.

A rood-screen of hammered metal from the design of Mr. Scott, intended for Hereford Cathedral, is the next object of interest in this transept. As a modern work—rivalling many of the beautiful screens of the Middle Ages, the works of Quentin Matsys, "the blacksmith of Antwerp," and other

artists who produced the fine examples left us of hammered work—this must be regarded with much interest. It is produced by the Skidmore Art Manufactures Company, who exhibit also similar works for Ely and Litchfield Cathedrals.

The other courts on the eastern side of the Transept are described in Class X., page 21.

EASTERN ANNEX.

The visitor has now been brought back to the point from which he started; and crossing the Dais, we pass, for the present, along the northern portion of the Eastern Transept—occupied by the COLONIES—into the EASTERN ANNEX.

Passing by the Canadian collection of minerals, the visitor will advance towards the Eastern Annex, and commencing in the Building, he will find

CLASS I.

MINING, QUARRYING, METALLURGY, AND MINERAL PRODUCTS.

There is nothing in the Exhibition Building which claims to be so decided a novelty as the case of Aluminium exhibited by Bell Brothers, of Newcastle. Aluminium.

The beautiful gold-coloured metal exhibited is aluminium bronze, formed by alloying copper with a certain proportion of aluminium. This alloy resists the action of the atmosphere and it is excessively hard. This latter property, united to its peculiar physical structure, which renders the polished surface exceedingly smooth and soap-like, thus reducing friction, appears to promise that this compound metal will become of much value. Aluminium bronze.

Here will also be found some fine masses of Sodium. sodium—the metallic base of soda. This metal, which is lighter than, and which consequently floats on, water, was discovered by Davy. Until within the last few years it was sold as a curiosity at sixpence a grain; it is now manufactured on a large scale at about 12s. a pound.

Model of
Holmbush
Mine.

Adjoining this case stands a model of Holmbush Mine, which is situated not far from Liskeard, in Cornwall, and produces lead and copper. The object of the model, which has been constructed by Mr. Thomas Jordan, for the Museum of Practical Geology, is to convey correct ideas of the nature of mineral lodes or veins, to those who are not likely to make subterraneous explorations. A model of the mining district of Shelve, Shropshire, is near this.

British gold.

Two cases of specimens of British Gold from Merionethshire are placed here. These auriferous ores from the Dolgelly district of Merionethshire, North Wales, are remarkable examples of the production of gold to a profit, for the first time in this country. We learn that in 1861 there were extracted from the St. David's lode 2,844 ounces of fine gold; and this rate of production is still continuing. There are also in this division some remarkable examples of Low Moor Iron, and others from the Monkbridge Iron Works.

Cornish
granites.

On the left hand of the first court will be found several good examples of the Cornish granites, from the quarries of Penryn, which have been so long celebrated, and from which the stones have been obtained for many of our most important works. Also from the Cheesewring quarries, near Liskeard.

Scotch
granites.

The Scotch granites are exhibited on the right-hand side of the court, in the slabs placed on the walls, and in the drinking fountains in the open court. These represent the granites of Aberdeen, Peterhead, and the Ross of Mull.

Serpentine.

Arranged immediately at the entrance will be found fine examples of Polished Serpentine, undoubtedly the most beautiful of the ornamental stones of this country. The three exhibitors have well shown the peculiarities and capabilities of this stone, which is obtained from the Lizard Point, in Cornwall. The Earl of Seafield sends some examples of the Portsoy serpentine. A fine block of the Irish serpentine, or Connemara marble, will be found in the open court, to the east of the Annex.

Portsoy ser-
pentine.
Irish serpen-
tine.

Devonshire marbles are shown in some chimney-pieces, slabs, and an inlaid table. Devonshire marbles.

Two cases on the stairs will require attention. One of these contains cobalt, nickel, and German silver. The other, platinum formed into crucibles and other vessels are of the utmost value to the chemist, since from the power of this metal to resist the action of acids he is enabled to perform experiments and carry out large operations with facility, which were only possible, with great difficulty, before the discovery of this mode of working the metal by Dr. Wollaston, which has been since improved by Deville. By the process of the latter we see here an ingot of pure platinum weighing 3200 troy ounces, or 230 lbs., of the value of £3840, in addition the rare metals, *in quantities such as were never before seen*, should be carefully inspected. Cobalt. Nickel. Platinum.

Derbyshire marbles are well known. These will be found grouped together, and the collection exhibits not only the peculiar varieties of colour which these stones present, and the patterns given by the organic remains, of which many of them are entirely formed, but they show the amount of skilled labour which has been in this country brought to bear upon the production of works rivalling the far-famed manufactures of the Florentine art workman. Derbyshire marbles.

Slates and Building-stones form an important group, and the application of slate to ornamental purposes is illustrated here by enamelled works by the Llangollen Slab and Slate Company. Enamelled slates.

The Clays of Cornwall, Devonshire, Dorset, Staffordshire, Yorkshire, &c., are instructive examples.

The metalliferous collections on the western side of this annex, from Cornwall and Devonshire, show the ores which are of commercial value. A specimen of copper ore from the Mountain Limestone formations of North Yorkshire, partaking much of the general character of the ores of Chili, exhibited by Mr. Bradley. Tin and copper ores.

In the Cornish collections will be found a series Elvans.

of stones locally known as "Elvans." These are of a porphyritic character, and are much used as a building stone in the localities where they are found.

Lead ores.

Lead ores are exhibited from several districts, especially from Mr. Beaumont's mines, at Allenhhead, from the Greenwich Hospital Mines at Alston Moor, the mines of Cardiganshire and Shropshire; and, associated with other minerals, is a case of specimens, from the celebrated mining district of the Lead Hills. Amidst these will be found some gold. The historical interest which attaches to these small specimens is considerable. At one period a large number of people left their honest industries in the wild hope of realizing great wealth from the auriferous streams of these Scottish hills. The *phosphates of lead* from Cornwall are rare and, to the mineralogist, interesting examples.

Gold from
Lead Hills.

Silver.

In connection with the lead ores exhibited by Mr. Sopwith, by Messrs. Langley and Dining, and Messrs. Cox and Co. and Messrs. Byers and Co., will be found cakes of silver, separated from the British lead. By improvements which have been made in the processes of desilverization, the quantity of silver annually separated from British ores amounted in 1860 to 549,720 ounces. A very large proportion of this was formerly lost. Messrs. Barker and Co. exhibit fine lead made by them from slag lead.

Zinc ores.

The specimens from Ireland are few. Some examples of zinc ores sent by the General Mining Company of Ireland, especially their carbonates of zinc, are of commercial interest. Iron pyrites from the county of Wicklow, and from Millom, in the neighbourhood of Ulverstone, in Lancashire, show us two of the sources from which much of the sulphur used in the arts is obtained.

Sulphur ores.

Arsenic.

Arsenic has several exhibitors.

Barytes,
Fuller's
earth, &c. }

Sulphate of Barytes, Fuller's earth, ochres, casting sands, chalk, whiting, &c., may be enumerated amongst the earthy minerals exhibited.

The examples of iron metallurgy and manufac-

ture are numerous, and, as showing the progress of this more important industry, instructive. The double-throw crank in the centre, weighing 25 tons, is a remarkable example of a production by the hammer. The bars of iron tied into knots, cold, from Earl Dudley's works; the weldless tyres, &c., from Blaenavon, and the numerous curiosities of iron manufacture contributed by nearly all the great firms of this country, show our manufacturing powers.

Iron metal-
lurgy.Hammered
iron.
Rolled iron.
Weldless
tyres.

The specimens of pig iron are many, the Scotch ironmasters having contributed largely; and as the fractures of most of the examples are shown, the peculiar qualities are at once seen. The necessities of the position of this class, and the gigantic requirements of the ironmasters have compelled the Butterley Company to arrange their interesting collection in the open court, and to erect a shed for themselves.

Pig iron.

The armour plates, rails, tyres, &c., which are exhibited in the open North Court, prove that great strides have been made in these manufactures.

Steel.

Amongst the iron ores exhibited may be named the spathose ores from Brendon Hills and Weardale; the brown hematites from Exmoor, Cornwall; the Forest of Dean, and other places. The two cases exhibited by Mr. Ebenezer Rogers, and by Dr. David Price, are instructive. The hydrated oxides of iron from Oxfordshire, Northamptonshire, and Lincolnshire, and the carbonates from the Hills of Cleveland, and from new districts in the coal measures, show how vast are the resources from which we can draw the materials for our rapidly-increasing iron manufactures. On the western side of the Annex will be found the collections of the Swansea committee and others. This embraces the metallurgy of copper: examples of the imports of foreign ores, the metallurgy of silver, nickel and cobalt.

Iron ores.

Copper.

Swansea col-
lection.

The ore-dressing machines exhibited are intended to economise labour in the processes of separating the metalliferous from the earthy portions.

Ore-dressing
machines.

Two fine models connected with the production

Model of workings in Cleveland.

of iron have a place in this class. One of these is of the workings in the Cleveland Hills in Yorkshire, and the other, which is a very large model, illustrating the metallurgy of this metal, at the works of Schneider & Hannay, of Ulverstone. A good idea of a complete and well-regulated iron-works will be formed from this model, showing all the recent improvements in the Blast Furnace. A fine model of a Coal-winding Engine, sent by the Taff Vale Railway Company, is placed here.

Model of blast furnaces.

Safety-fuze.

Safety-fuzes of the ordinary kind, others in which the powder is placed in a metal tube of small bore, are exhibited; and also the Safety-cartridges of Copeland, especially useful for firing holes in wet ground or under water.

Safety-cartridges.

Boring-machines in open court.

Ere yet we quit entirely the subject of mining and mineral products, attention must be directed to two machines for boring rocks, exhibited in the open court. One of them bores by the usual jumping action, and the other by drilling holes. Mr. Reid, of Pelton Colliery, near Newcastle-on-Tyne, shows a method for withdrawing broken rods, with several novel and useful adjustments, belonging to this series of instruments.

Coals.

Sections of strata.

Coals of several districts and of very varied qualities are shown both in this Annex and in the adjoining open court. Sections of strata, drawn, in most cases; but in one or two instances the actual strata are exhibited showing the order of occurrence. On the walls will be found many of these—which will convey much information to those who are not acquainted with the conditions under which the fuel of this country occurs.

Cannel coal.

Cannel coal from Scotland, from Lancashire, and from North Wales, may be regarded as standing at one end of the series, representing a fuel containing the largest quantity of volatile matter, and the most valuable for gas making, while the anthracite coals stand at the other, approaching to nearly pure carbon, and capable of generating intense heat without smoke.

Anthracite.

Model of collieries.

The coal trade of Durham and Northumberland

show the most approved methods of underground transit and of ventilation, while from the Midland Counties Mr. Woodhouse contributes a fine model of a colliery, with some appliances of a similar nature. Another model is intended to exhibit improvements in the mode of passing the air through the workings of collieries.

Safety-lamps, all of them being modifications—Safety-lamps
but many of them exceedingly ingenious modifications—of the Davy lamp, are associated with these. Then we have models of safety apparatus for the shafts, and in the outer court is a full-sized Safety-Safety-cages.
Cage and hoist. Two models, one of Sunderland and the other of Seaham harbour, are associated with these, as being the great ports for the shipments of coal; and with these the methods of loading coals are exceedingly well shown in two Loading
coals.
models.

Amongst the miscellaneous objects of interest will be found illustrations of Mr. R. Oxland's process of separating wolfram from tin. Separation of
wolfram from
tin.

An ingenious method of preparing crystalline forms on paper should be examined. Crystals in
paper.

A pillar of salt, constructed by the Liverpool and Northwick Chamber of Commerce, shows the peculiar character of rock salt. This useful production also finds a place in Class III. Pillar of salt.

A series of plans and sections of the Cornish mines are on the walls; and at the lower end of the Annex will be found the Geological Map of England and Wales. This large and beautiful map shows, at a glance, all the more important geological formations in the order of their occurrence. The portion of the country exhibited is that which has been completed by the officers of the Geological Survey of the United Kingdom. This survey was commenced by Sir Henry de la Beche, and is now continued under the direction of Sir Roderick Impey Murchison. A portion of Lancashire, on the scale of six inches to the mile, hangs on the side wall. Near it will be found those parts of Ireland which have been completed, and also those of Scotland. Geological
Map of
England.

Geological
Maps of
Lancashire,
Ireland, and
Scotland.

Geological
sections.

A number of Sections, both horizontal and vertical sections, show the order of the stratification of different districts. These are accompanied by some examples of the engravings of fossil remains, which have been executed by Mr. Lowry to illustrate this great national work.

Open Court.

THE OPEN COURT, to the west of this class, has some objects of especial interest already named. The slate slab from the Llangollen quarries is perhaps the largest which has ever been got out.

Sandstone
obelisk.

The obelisk in Gazeby stone, the monument from Bradford, and the block from Lord Denman's quarries in Derbyshire, show the different characters of the sandstones.

Safety
cages.

The Boring-Machines and the Safety-Cages which can be worked here have already been described.

Corrugated
roofing.

The masses of iron ore and of coals require no comment. The corrugated roofing on the rustic sheds are so placed as to claim the attention of agriculturists and others, to whom the means of erecting sheds cheaply is of great importance.

This class, which is devoted to Mining and Metallurgy, leads into

CLASS II.

CLASS II.

CHEMICAL SUBSTANCES AND PRODUCTS, AND PHARMACEUTICAL PROCESSES.

Pharmaceu-
tical prepara-
tions.

New dyes.

Mauve and
Magenta.

Aniline
purple, &c.
Dianthine.

Entering from Class I., the valuable collection of preparations made by the Pharmaceutical Society and other exhibitors, may be inspected with advantage. Few cases can be more instructive than that of Mr. Rumney, who gives illustrations of the new chemicals introduced for dyeing and calico-printing since 1851. All the beautiful varieties of Mauve, Magenta, Solferino, Roseine, and many other tinctures—the products of re-combinations of the elements found in coal—mark the progress of human thought and the power of mind when directed in a correct channel. There are many exhibitors—amongst others, the patentee himself—of the aniline or Perkins's purple, of aniline green, of dianthine. The *Magenta crowns* excite general admiration. Indigo of rare

purity is exhibited, and remembering that we get the term *aniline* from one of the names given to an indigo-bearing plant, it is instructive to trace the coloured combination of carbon, hydrogen, and oxygen which are now obtained. Indigo.

The chemical products from *sea-weed* are singularly instructive—the opium series of salts are no less so. Sea-weed products.
Opium products.

Pigments from the mineral and vegetable kingdoms are numerous; and some beautiful colours which have their origin in the animal economy are also here. The case of colours used on Pottery is very complete. Pigments.

Alkali manufacture is well exhibited, as indeed are all the large commercial chemical results, and in many of the cases crystals really marvellous in size, perfect in form, and beautiful in colour, must excite admiration. Alkalies.

Essences and essential oils, metallic paints, marking-ink, blue, starch, polishing powders, bones, manures, blacking, varnishes, and a multitude of products dependent on chemical knowledge, have their place in this class. Essences.
Sundries.

The applications made by Versmann of the tungstate of soda to render light fabrics non-inflammable, should be noted. Non-inflammable fabrics.

Mr. James Young, the patentee, sends Paraffin oil. The safety of paraffin oil as an agent for illumination may be insured by placing a few drops in a teaspoon, floating the spoon on a teacup of water, at 110° Fah., and holding a lighted taper an inch above it. If its vapour ignites, it is not safe; if no ignition takes place, it may be used without apprehension. Paraffin oil.

Extending onward, northward, in the eastern wing of this Annex, we find

CLASS III.

CLASS III.

SUBSTANCES USED FOR FOOD.

The exhibitors in this Class are not numerous. Wheat, barley, oats and other cereals are here—with some varieties of flour. Cattle condiments, Cereals.

- Malt and hops. compressed hay, and other forage, find a place, as do also malt and hops.
- Preserves. Confections. The Sub-Class B shows us a great variety of preserved fruits, meats and vegetables. Confectionery of the most ornamental and attractive kind; marmalade and jams, with toffee and cocoa-nut ice; collections of teas, coffee, and chicory, cocoa and chocolate; biscuits made in various ways, by machinery and by hand, are numerous; while wedding cakes are suggestive, and "cakes for cats, poultry, pigs, and dogs," somewhat amusing.
- Tea, coffee, &c. Sub-Class C gives us Bass's and other Burton and Preston Pans ales; British wines, cyder, and perry; malt vinegar and liqueurs. There are a few exhibitors of tobacco.
- Cakes.
- Ales, wines, cyder., Tobacco. The Silicated Carbon Filter Company exhibit the results of their invention in several filtered liquors.
- Filters.

CLASS IV.

CLASS IV.

- Wax. ANIMAL AND VEGETABLE SUBSTANCES USED IN MANUFACTURE are much more extensive, and well deserve a visit. It is difficult to guide the visitor to the special articles, as it was not possible to arrange them, except in large and comprehensive groups. The Sub-Class A embraces *Oils, Fats, Wax, and their products*. This group includes wax, candles, soaps, and oils. Of the first we have wax candles, wax flowers, a "Kentish bank of flowers in July, modelled in wax," and wax figures. Candles exist as paraffine, stearine, spermaceti, and composite. Soap puts on various characters, which are, however, multiplied when we come to the scented soaps placed in the Perfumery Class. Railway greases, lubricating oils, and like substances, are more useful than ornamental.
- Candles. Soap. The Sub-Class B—*other Animal Substances used in Manufactures*—embraces wools and hairs. The collection of wools sent by the Royal Agricultural Society of England appears complete. Some of the processes of cleaning and dressing wools are shown. Samples of cotton grown in every part of the world, with specimens exhibiting the length of staple, are
- Grease. Wools. Hairs.

exhibited by the Cotton Supply Association. British silk and flax are also shown here. Ivory and its manufactures, and especially turnings in ivory, are numerous, and many of these most elaborate in design.

British silk
and flax.
Ivory turn-
ings.

Tortoiseshell and other combs, the pearl oyster and other shells, brushes, glues, gelatines, gold-beaters' skins, &c., form a miscellaneous class. Sub-Class C—*Vegetable Substances used in Manufactures*.—This is an excessively miscellaneous group. The fibres of the aloe are shown as a substitute for hair, as is also cocoa-nut fibre. A curious collection of canes will please many visitors. Fauntleroy & Co., as in 1851, exhibit foreign hard woods: collections of veneers are also exhibited.

Tortoiseshell.

Aloe and
cocoa-nut
fibre.

Woods.

An improved process of treating the *materials from which paper* can be made is important in these days, when the demand for paper increases and the supply of rags proves unequal to the demand.

Materials
for paper.

India-rubber, native and manufactured, vulcanized—that is, impregnated with sulphur, which gives it great additional elasticity—shows its many very useful applications. Ebonite, the ordinary compound of India-rubber and sulphur exposed to a high temperature, is shown. A substance resembling ebony is the result of this treatment. It is applied in the manufacture of desks, chains, canes, and electrical machines. This last application of Ebonite is a striking one; it is a hard black substance, and when mounted, as a plate of glass is mounted, in ordinary electrical machines, and subjected to the friction of the rubber, the electricity excited is very great.

India-rubber.

Ebonite.

Ebonite
electrical
machines.

Gutta-percha naturally follows and accompanies an exhibition of India-rubber.

Gutta-percha

Having some remote relation to these substances, Mr. A. Parkes exhibits "Parksine." This novel substance is manufactured into card-cases, knife-handles, plates, and ornamental articles of various kinds. It is of several colours—is not unlike tortoiseshell, except that it will not break. There appears to be no end of uses for this substance, which is conso-

Parksine.

lidated castor oil. This consolidation is effected, as we understand the process, by the action of chloride of sulphur. Another case of consolidated oil should be examined.

Fishing
tackle.

Considerable quantities of fishing tackle, including flies of nearly all the varieties required by the lovers of the sport, are exhibited.

PERFUMERY.—Within this division will be found illustrations of the methods by which Nature is robbed of her fragrant odours. We learn how the jasmine, the violet, and the rose give up their odours to grease, and how from this grease the odours, re-dissolved in spirit, produce the flower essences.

Essences and
oils.

Distilled essences and waters, together with a great variety of essential oils, are exhibited. Frangipani, Stolen Kisses, and various other perfumes for the handkerchief, are here.

Gum
resins.

Fragrant gum resins, for pastiles and incense, are also in this Class.

Scented
soaps.

Soaps of many colours and varied perfume, violet powders, and sweet-scented waters, are shown.

Vinegars.
Sachets.

Smelling-salts and toilet vinegar are especially exhibited; Sachet-powders; Milk of Almonds, and varied emulsions,—which are only the gummy and oleaginous parts of the almond—sweet and bitter—held suspended in pure water, usually by the aid of a little curd soap; hair-dyes, some being nitrate of silver; others salts of manganese, cosmetics, unguents, oils, hair-washes, bandalines, and bear's grease; and show how carefully the adornment of our persons is studied by the exhibitors.

Hair dyes,
&c.

Fountains.

Fountains of perfumed waters are here.

At the end of this Annex will be found a collection belonging to Classes VII. and VIII.

MACHINERY NOT IN MOTION.

Solid drawn
tubes.

This may be regarded as the overflowing of the Western Annex, nevertheless many objects of peculiar interest are here. The drawn tubes may be especially noticed as remarkable manufactures, and

there are other examples of metal work which prove the skilful handicraft of the British workman.

Amongst the several striking objects here shown may be named Wright's railway carriage for Egypt. There are two bread-making machines; one as used by Dr. Dauglish, and another by Stevens, with the arrangements for making and baking biscuits.

Railway
carriages.
Bread-
making
machines

Lloyds, Forster & Co., have a turn-table, moving on spheres instead of rollers.

Turn-table

Bray's Traction Engine, which has done such good work in moving heavy goods to the Exhibition, is here, and also Taylor's Elephant Traction Engine. The examples of brass engine-fittings by Muntz, Russell of Dudley, and Allen, Harrison & Co., are beautiful examples of the combination of chemical knowledge and mechanical skill.

Traction
engines.

Engine
fittings.

Mechanical contrivances of great ingenuity are displayed, and immediately connect themselves with the fixed steam-engines in the adjoining class.

CLASS IX.

Class IX.

AGRICULTURAL AND FLORICULTURAL MACHINES AND IMPLEMENTS.

Portable steam-engines for agricultural purposes are exhibited by several manufacturers, most of them presenting different points of construction. These are, as might be expected, associated with *steam-ploughs*. In 1851 these were a novelty; and many will remember the interest excited by the trials of these and the reaping-machines.

Portable
steam-
engines.

Steam
ploughs.

Of ploughs in general, there appears to be a great variety; and these are associated with cultivating-machines, by which the soil can be brought to any required degree of division.

Ploughs.

Clod-crushers and rollers, and all other implements for preparing the soil, find a place in this collection. Drills, both corn and seed, horse-hoes, manure distributors, and almost every appliance for improving the soil and planting the seed, are here.

Clod-crushers
and rollers.

Lawn-mowers may be placed in the same Class

Lawn
mowers.

Potato-
diggers.

with reaping-machines; and the potato-diggers, as removing the fruits of the earth when their harvest is at hand, may be named as being exhibited in conjunction with them.

Threshing-
machines.

Threshing-machines, fixed and locomotive, horse and steam, are shown by several well-known manufacturers; and combined Threshing, Shaking, and Dressing machinery completely supplant the flail and the ancient mode of winnowing.

Carts

Carts of all kinds, varying greatly in size and shape, are brought forward; many of these appear remarkable for their lightness and elegance united with strength.

Churns,
cheese-
dressers, &c.

Passing from ploughs, grubbers, harrows, chaff-cutters, oat-bruisers, root-pulpers, oil-cake breakers, &c., &c., we find the farmhouse provided with steaming apparatus, churns and dairy utensils, brewing apparatus and pig-troughs, cheese-presses, washing and mangling machines, and many other useful appliances.

Garden orna-
ments and
tools.

The garden is not forgotten. Garden-seats of various patterns, fountains, fences, horticultural engines and fumigators, are added to the implements and tools required for the cultivation of flowers.

Horticultural
buildings.

In the large court will be found Conservatories, and other Horticultural buildings.

Bees at work
in glass
hives.

In 1851 the working bees attracted much notice; groups of children especially were often seen deeply interested in the labours of these industrious creatures. We have now exhibited, beehives adapted for cottagers and others on the depriving system, without destroying the bees, which appeals to our humanity: the rotatory cupola beehive, apiary with working bees, and especially the Ligurian bees at work in glass hives.

Returning from the Eastern Annex,

THE BRITISH COLONIES,

which are grouped in the North-Eastern Transept, will be surveyed with much interest.

CANADA.

This large colony is represented most admirably. The collection of natural productions is remarkably fine. The timber trophy unmistakably marks this land of forests. The woods forming this were collected during two months of a Canadian winter. The most important collection is in the form of square timbers, logs, or sections of trees and planks. The planks are twelve feet long and four inches thick, with the bark on both edges. Of these, nearly 100 in number, there are samples of white oak, four feet wide. Walnut, ash, and maple, from three to four feet wide, and one plank of pine, from the township of Bayham, twelve feet long (and it could have been cut fifty feet long) and fifty inches wide—without a knot—sawn from a tree twenty-two feet in circumference and 120 feet to the first limb, and 240 to 250 feet high; the first four logs, each twelve feet long, making 8,000 feet of timber after being squared.

Wood trophy.

Some 200 specimens of polished veneers, a scientific collection of sections of trees, with twigs, leaves, and flowers, making about 100 kinds, collected from those remarkable forests over an area of 2,000 miles.

Veneers.

The mineral collection is no less remarkable than the vegetable one. Gold is exhibited from the alluvial deposits. Iron ores in abundance. Copper ores of the finest descriptions. Lead ores, plumbago, large sheets of mica, with phosphate of lime, and chromate of iron.

Gold, iron, copper, lead, &c.

There is a large collection of building-stones, marbles, and serpentines.

Building-stones.

The collection of the crystalline rocks of Canada is a large and interesting one.

These must be regarded as the great points of the collection; but it contains numerous articles of commercial value and especial interest—as the oils of fishes; skins of the white porpoise; fishes taken from the large inland lakes of Upper Canada, and the streams running into them and the gulf of the St. Lawrence; furs; about 150 kinds of native birds; and a collection of coloured plates of

Oils.

about 120 of the fruits of Upper Canada; and botanical collections: as also collection of agricultural implements, a handsome carriage, &c., and a variety of edge-tools.

NEWFOUNDLAND

follows Canada under the Gallery in this Transept.

Fisheries.

The chief objects of importance in this, the most ancient of the British Colonies, are fish and oils. The annual British catch of codfish and caplin amounts to about ten million fish. The French bank and shore catch being about five million. Seal oil is largely exhibited, and a stearine from the seal fat much used for soap. The seal refuse and fish offal are now made into a deodorized manure. This is exhibited.

Minerals.

Of minerals, Newfoundland sends us grey oxide, peacock and yellow copper ores. Mundics, argentiferous lead, vitreous, ruby and chloride of silver, quartz, rich in silver. Iron ores and marble.

Gisborne's signals are exhibited here, and there is a fine chart of the colony.

NEW BRUNSWICK.

Ores.

This colony follows Canada in the Transept. The collection is a miscellaneous one. The Commissioners have sent numerous metalliferous and earthy minerals, especially iron ore, with coal of ordinary quality, some highly bituminous, and Albertite.

Agriculture.

Agricultural implements and produce, especially storing wheat, Indian corn, black oats, buckwheat, timothy seeds, beans, and peas, with native woods, dried grapes, Indian woad, woollen manufactures, maple door, and furniture of various kinds are exhibited. An enamelled mantelpiece, ornamental conework; and there are some models—as of the suspension bridge over the falls of St. John river, and of an American railway-train, engine-house, saw-mill, windlass, &c. Preserved and spiced salmon and lobsters, moose's horns, &c., are amongst the contributions from the animal kingdom; and a mirror, with gilded frame, is also in this colony's collection, as if to mark the march of refinement in the colony.

Bridge.

PRINCE EDWARD'S ISLAND

has place beside the New Brunswick exhibition.

Agricultural implements and produce, together with furniture from the native woods. Samples of hemp (eight feet long), Indian baskets, leathers, furs, and bear-skin. Grains.
Hemp.

BRITISH COLUMBIA (VANCOUVER)

has its representatives adjoining this; and here will be found examples of the gold deposits, which have lately excited so much attention. The Committee also send other native products, as minerals, a spar of the Douglas fir 220 feet long, and other woods. Gold.

NOVA SCOTIA

will be distinguished by her great coal trophy. The pillar of coal, thirty-four feet high, shows the vertical thickness of the great Pictou coal-bed; there are other minor columns, each representing a bed. Professor Hone has made and exhibits a complete collection of the minerals of Nova Scotia, with a series of gold samples from the gold-fields of Nova Scotia, of the value of 4,000*l.*, and marbles and stones. Coal trophy.

The moose or deer of Nova Scotia guards the entrance to the side court, in which will be found specimens of fish, to show the importance of the great fisheries of this country, and a collection of native birds. The Moose.

There are eighty-four samples of wood, a good collection of the chief fruits, grains, and roots. Agricultural implements are sent over, and furniture and music made from native woods. Woods.

MALTA.

In this island the silver filigree work of the Maltese is well known, as are also their stone vases, some fine examples of which are shown, with much beautiful lace work.

CEYLON.

This interesting colony has a small, but very in-

teresting collection of the mineral and vegetable products of the island. The fruits, fibres, and spices, and the plumbago and iron, with the Singhalese axes made from the latter, and furniture of native manufacture, are most instructive.

THE WEST INDIA ISLANDS.

are represented in continuation of this group, and much of interest will be found in the collections from DEMERARA, BARBADOES, TRINIDAD, JAMAICA, DOMINICA, ST. VINCENT, and BERMUDA.

TASMANIA

Spars. is well marked by her trophy of spars, and two well-made boats. The mineral products should be carefully examined, especially the coal. The furs are numerous, and of a fine quality. The photographs of the natives are of much interest.

VICTORIA.

Gold
pyramid.

Iron.

Fine
Art.

This colony is distinguished by the remarkable gold trophy under the dome, and by the wonderful collection of gold exhibited in the glass case near the Victorian Court, which is marked by its trophy of wools. Such a display of native gold was never before seen as is here displayed. The mass of meteoric iron on the stairs is exceedingly remarkable, and the exhibition of kaolin (China clay) shows another resource discovered in this fine colony. The photographs of buildings, of striking scenes, and the beautiful pictures will enable any one to realize the character of this, the most energetic of our younger colonial possessions. The court and the collection in the Transept abounds in objects of interest.

SOUTH AUSTRALIA.

This important colony occupies the space at the north-west corner of the Eastern Dome.

Malachite.

The splendid malachite table, the enormous masses of red oxide and carbonates of copper, sufficiently mark its character. In a case on the wall are a vast number of selected specimens of the green and purple carbonates of copper, which are, many of them, of the most beautiful character, possessing

a high mineralogical value in addition to their commercial interest.

The birds of South Australia will be of interest to the naturalist. The collection of woods may be fairly compared with those from the other colonies who exhibit them. Birds.

NEW SOUTH WALES.

This important colony is immediately connected with South Australia, on the north of the Nave.

The collection of woods contributed will excite much attention. They are most varied in character, and many of them of great beauty. The Southern districts contribute 194 specimens, while 115 are sent from the Northern districts. Woods.

Cereals are well shown. Cotton is, in every way, an important vegetable fibre; scarcely less so gums: resins and dyes will soon find a place in commerce. The wines are becoming of commercial interest. Tobacco, cayenne pepper, preserved and dried fruits, are exhibited. Cotton.

The alpacas of this colony, skins, and animal oils, honey, feathers, cochineal, well illustrate the animal products. Skins.

The mineral productions are of great value. Coal is exhibited with the associated fossils, by which the age of these coal deposits can be determined. The gold-fields of New South Wales send their products in the shape of native gold, quartz, and mundic. Iron comes from county of Camden, &c. Copper ores from several districts. Silver-lead ores and many other metalliferous and earthy minerals. Minerals.

Oil paintings, water-colour drawings, photographs, works in precious metals, printing and bookbinding, leathers, cabinet work and textile fabrics, show the progress making in this colony. Art.

The aboriginal implements will be examined with much curiosity by many.

NEW ZEALAND

is under the Gallery fronting the Nave. The 500 ounces of Otago gold, copper ores, and other mine-

erals show the resources of this colony. The provinces of AUCKLAND, of NELSON, of OTAGO, and of WELLINGTON each contribute fine examples of vegetable products. The character of the colony is well shown in the photographs and paintings exhibited. Behind this court is

WESTERN AUSTRALIA.

Ores. Copper and lead ores, of fine character, are largely exhibited. Specimens of iron ore, ferruginous sands, and porcelain clay.

Woods. The animal and vegetable substances used in manufacture are numerous. The woods are very fine. The collection of leathers, from the skins of kangaroo and calf, are good.

Weapons. Curious and interesting are the native weapons and articles of dress, including spears, shields, kylies, native head-dresses, nose-bones, girdles of human hair, spun opossum wool, &c.

The feather flowers, feather screens, and a lady's muff made of parrot feathers, are worthy of notice.

Wines. The wines, wheat, with gums and hops, preserved meats and fruits, well illustrate Class III. (*Food.*)

QUEENSLAND

Is immediately behind New South Wales.

Minerals. The mineral products supplied are — coals, some fine specimens of copper ores, and a collection of building stones. A very magnificent collection of the woods peculiar to the colony is sent over, with other vegetable productions; also specimens of spears, tomahawks, and fishing lines and hooks used by the natives. **Skins.** Skins from different animals; head-dresses and hair-combs; the different seeds used as articles of food by the natives. Also in this colony is a fine collection of wheat, barley, rice, maize, arrow-root, fruits, their preserves, jellies, &c., and some fine agricultural implements.

Cotton. Many other interesting things, amongst which are the Sea-Island cotton, tobacco, sugar, &c., will be found in the list of articles sent by this important young colony.

NATAL

Is arranged immediately north of New Zealand.

The woods are here again of very great interest. Woods. A large side-board made in the colony is a striking object. The collection of the horns of the antelope is fine, and the skins of wild animals, ivory, &c., important.

The agricultural products show a country of great promise. Wool and cotton are good and abundant. Wool and cotton. Tea and coffee are largely grown, and the specimens exhibited are good. Sugar of native manufacture, and tobacco, may also be noted as of commercial value.

THE BAHAMAS AND HAYTI have a small collection here.

INDIA.

This important Possession occupies the Gallery running from the north-east corner of the Nave to the north end of the Eastern Transept.

The productions of special importance from India are, first, those from Bengal. The collection from Bengal and the North-Western Provinces consists of the products of the soil, and among these particularly oils, seeds, gums, resins, medicinal substances, fibres, and timbers. The tea districts of Assam, Cachar, Sylhet, Darjeeling, Dehra Dhoon, Gurhwal, Kumaon, and Kangra are all represented.

Among the articles contributed are several which show the improvement which has taken place in manufactures, and even in works of art. Amongst the latter, the paintings on ivory from Delhi deserve especial attention. There are two—one a landscape, the other the interior of a temple—which will attract attention. Several of the paintings are faithful copies of photographs taken at Lucknow.

The Calcutta "Chickun" work, or needle embroidery, comprises specimens of extraordinary cheapness, as well as of the highest finish. These will be found of exceeding interest.

The floss silk embroideries of Cashmere cloth and

net from Delhi are fine. Greatly superior to specimens already seen in this country, we have now the advantage of greatly improved patterns, with cheapness.

Carpets.

Carpets, as usual, show the blending of colours to be an intuitive faculty with this people.

Shawls.

Of Cashmere shawls the collection is large. The greater portion consists of private contributions. Some sent from Srinuggur, the capital of Cashmere, and from Umritsur, are superior.

The "kuftgori" work, or steel inlaid with gold, from Goojerat, in the Punjaub, will claim attention.

The assortment of silks from various parts of India is very large. Some from the Punjaub and other parts are excellent, and of brilliant dye.

Embroidery.

The embroidered silks and brocades from Benares stand unrivalled. The workmanship is of the highest finish, whilst the interweaving of the gold and silver threads with the silk shows exquisite taste. The kinkobs or brocades are very rich.

The greater portion of the manufactures in cotton and hemp consists of specimens of cloth, &c., made by prisoners in the various jails.

Paper.

The specimens of paper in the present collection comprise a large variety. There is the famous paper made of the daphne plant in Nepal, illustrated by the fibre of the fresh shrub and specimens of the paper in all the stages of its preparation.

The manufactures in straw from Monghyr are good, and their merit is enhanced by their cheapness.

The lac-work sent from Bareilly, and the turnery from Lahore, called "pack puttan" work, commends itself on this occasion by its superior workmanship.

Silver filigree.

In addition to a collection of clay figures from Kishnagur, are some excellent specimens of plastic models from Oude. From Cuttack, the silver filigree work upholds the reputation of native workers in the precious metals for minuteness and accuracy of design and execution.

The collection from Bombay is interesting and important.

The works in jade in crystal and in soapstone are Jade.
rare and valuable.

Cotton, its preparation and manufacture, are well Cotton.
represented.

Rich samples of raw, manufactured, and dyed
silks have been forwarded from Khyrpoor, Musher, Silks. |
Shikarpoor, Kutch, Zeyd, Bokhara, Cabul, Kishur,
Candahar, Mandanee, Dharwar, Ahmedabad, and
Belgaum, while most of these places furnish speci-
mens of mixed silk and cotton fabrics.

Of wool and woollens, Bombay sends examples of Wool.
the produce and manufacture of Cashmere, Cabul,
Herat, Musher, Khorassan, Kelat, Kutch, Dharwar,
and also Shikarpoor and Upper Scinde, whence
come specimens of fibre, and goats' and camels'
hair.

The plain and embroidered muslins from Bombay Muslin. | 7
give a fair idea of the quality of manufacture, while
the embroideries generally, on velvet, silk, leather,
and cloth, are of a high degree of excellence, both in
design and execution.

The elaborate carvings in black-wood, sandal- Carvings.
wood, and ivory, and in a material termed "ra-
tanglee," from Malabar, and the articles of inlaid
ivory, are of a high degree of excellence. Enamel-
ling in the precious metals is well represented by
arms and armour contributed by their Highnesses
Meer Ali Morad of Khyrpoor and the Rao of Kutch,
who also send costly specimens of skill in the gold
and silver smiths' art. The shield exhibited was
manufactured at Mandanee.

The collection from Madras consists of a great Timber, oils,
variety of specimens. A valuable portion of the &c.
whole consignment from this Presidency is that
which, under the head of raw products, includes
timbers, oils, seeds, gums, resins, dyes, &c.

There is a valuable assortment of woods from
Vizagapatam, South Canara, and Bangalore, of oils
from South Canara, of dyes, gums, saltpetre, sugar, Sundries.
and candies from Salem and North Arcot; mineral
products and shells from Vizagapatam and the
Andaman and Cocos Islands.

Of fibres and rope, Burmah, Bangalore, &c., send examples, and Salem and Cuddapah also furnish indigo and coffee.

Shawls.]

In shawls, embroideries, and silks, those forwarded from Madras are, like the specimens from other parts of India, unrivalled in variety and beauty of design. The lace-work from Tinnevely and Vizagapatam is well known for its beauty.

Arms.

Of arms, cutlery, &c., the collection for exhibition is comparatively small, Salem, Malabar, and Burmah supplying the best specimens.

Fine Arts.

The Fine Arts in Madras are represented by engravings, photographs, and drawings. Some miniatures on ivory especially illustrate the delicacy of finish, minuteness of detail, and brilliancy of colour which have ever been remarkable in native drawings. A temple from Burmah, a curious model in pith from Tanjore, and some copper figures from North Arcot, are worthy of notice.

Among the varieties from Madras may be especially mentioned the pottery from the School of Industrial Arts in Madras, as well as from Bangalore and North Arcot.

Minerals.

The mineral classes are represented by coal from Borneo and Malacca, iron from Saigon (Cochin China), earths and clays from Singapore, Malacca, and Penang; while the tin ore of Kassang, Malacca, Penang, &c., is stated to yield from forty-five to sixty per cent.

A portion of the Indian collection extends along a Gallery which runs against the wall of the Refreshment Rooms.

Descending from this Gallery, and passing through the Classes devoted to FURNITURE, and already described, we have an interesting group devoted to

THE IONIAN ISLANDS, from which are exhibited a large collection of embroidery, some minerals, vegetable products, and a few manufactures.

ST. HELENA, the MAURITIUS, the latter exhibiting sugar, some woods, arrow-root, and iron ore; and

the CHANNEL ISLANDS, contributing a few articles only, will be found near the entrance to the HORTICULTURAL GARDENS.

FOREIGN COUNTRIES.

In the group which has just been described will be found a collection from CENTRAL and from WESTERN AFRICA, cotton from the latter being the most interesting product.

SIAM

has also a few natural products and native manufactures here. Siam.

CHINA AND JAPAN

form the centre of this group, China sending a skull superbly set in chased gold, magnificently carved ivory vases, bronzes, and ornaments in jade. China.

A translation of Sir J. Herschel's "Astronomy" and other books are of much interest. Books.

There are also some objects from Formosa.

JAPAN shows fine specimens of porcelain. Samples of copper, lead, and other minerals, as coal and lava, &c. Japan.

The collection of bronzes, and specimens of lacquer ware, enamelled objects on ivory, mother of pearl, and tortoise-shell; manufactured articles and productions are of great interest. Bronzes.

Crossing the Nave we find the continental countries demanding our close attention.

ITALY.

The ITALIAN COURT occupies the space between the central avenue and the French court, and is well marked by the statues which adorn it. Amongst a really valuable collection of *minerals*—copper, lead, iron, zinc, and smelted copper are the more important. Sulphur is largely exhibited, and also samples of stones. Carved and inlaid woods and furniture are of a very interesting character. There are a few fire-arms, and some good artificial flowers. Castellani's display of jewellery, copied from antique models, is one of the finest of its kind. Italy.
Minerals.

It is shown in the chief Court surrounded by a display of silks.

Outside this Court are the numerous statues and works of art, such as mosaics, inlaid tables, and furniture. A great display of the latter is shown as a trophy in the Nave.

ROME.

Rome.]

The Court devoted to this country is properly placed one of the nearest to the Fine Arts collection. Along the central avenue are placed a series of marbles statues already noticed.

Statues.]

Groups of statues are ranged around the principal court, of which the finest are :

The Libyan Sybil. The Cleopatra. Zephyr and Flora. The Wept of Wish-ton-wish, and Jephthah's Daughter. Many more will have admirers.

A bust of Cardinal Wiseman is in the centre, after which comes a magnificent Mosaic Table, by Monachesi.

Mosaics.

In the next Court are samples of the Mosaic productions of the Government Establishment at Rome. Among these we may mention two copies of the Madonna, after Raphael.

PORTUGAL.

This country occupies a Court, at the corner of the central avenue and the Nave, on the south side.

Minerals.]

This is the first time that any mineral produce of consequence has been exhibited from this country, most of her mines having become noticeable since 1850. The exhibition now contains coals, iron, copper, and antimony. Amongst other raw materials we have a good collection of marbles, and a considerable variety of building stones. The marbles are well illustrated in polished slabs for tables. Vegetable products are confined mainly to oils and tobaccos, and a large collection of seeds, silks, and woollens, with a small quantity of worked stuffs, are the chief illustrations of the textile manufactures of this country. The wines of Portugal are well illustrated.

Marbles.
Building-
stones.

Oils.
Tobaccos.
Silks and
Woollens.

SPAIN.

The Spanish Court is situated on the Southern side of the Nave, between the Courts which are occupied by Portugal and France. Amongst the native produce will be found a fine collection of woods, grain, and tobacco. Manufactures are exceedingly well illustrated in the mixed stuffs and woollen goods. The silk embroidery is of a peculiarly fine character.

Wines.
Raw materials.
Stuffs.
Woollens.
Silk-embroidery.

Much of the carved furniture will be admired, and the pianos are remarked as being of fine tone.

A rifled brass gun, a large display of military equipments, and a case of saddlery, will attract attention, as well as some jewellery and watches. There is also a display of porcelain, from Spanish manufactories, which latter have only been recently established, all pottery having until lately been imported from England.

Jewellery.

FRANCE.

The French occupy the whole of the South Western Court of the building, and of the galleries around it.

At the entrance of the Court, and within it, will be found a great display of bronzes by various exhibitors, and especially by Barbedienne, Denières, and Marchant. The latter also shows some handsome chimney-pieces; while general hardware, locks, &c., are exhibited by Barbedienne. The most interesting points of the French collection are china and porcelain by Gille. Samples of printing, by the "*Imprimerie Impériale*."

Bronzes.

Porcelain.

Two chandeliers in bronze gilt, and inlaid with crystals, by Messrs. Daniere and Paillard, at the bases of the two entrances, are of a very striking character, and novel as examples of art manufacture.

Chandeliers.

In the centre of this Court, the chief object of attraction is a centrepiece or ornament, forming part of the service of plate belonging to the Hôtel de Ville of Paris. An allegorical figure of Paris is being drawn in a ship by the French Eagle; around

the vessel Naiads and Tritons are playing. This is manufactured by Christophé and Co. Near this is a display of church plate by Messrs. Poussielque and Rusaud.

Pearls.

It is impossible to mention all the splendid jewellery here displayed; among the most prominent objects are:—Six strings of pearls by Mr. Marret, worth 18,500*l*. Near this glistens a magnificent necklace of rubies and pearls.

Jewels.

Mr. Rouvenat exhibits a brooch of brilliants and emeralds, the design of which is a dragon and a falcon. The dragon's wings are tipped with emeralds, while he is supported by branches and leaves formed of diamonds.

A great novelty is a ring with a fine diamond, which is so made that it can be worn as a ring or bracelet.

Precious metals.

Messrs. Payen and Son exhibit one of the most elaborate pieces of workmanship in this court. It is an allegorical shield of gold filigree work in commemoration of the Exhibition. The centre is a gold plate enamelled with a representation of the various nations. The frame is formed of filigree in imitation of all the various descriptions of this work, *i. e.*, Chinese, Indian, Genoese, &c. On this are copies of the state seals of the principal countries.

Tapestry.

At the southern side of the court is a most magnificent specimen of the Gobelins tapestry. It is a copy of the "Assumption of the Virgin," after Titian; and a portrait of Louis XIV., the shades and colours of which are so delicate that at a short distance they may easily be mistaken for paintings.

Sèvres China.

Before these are a quantity of porcelain and China vases of admirable design and workmanship from Sèvres.

Silks, &c.

The lace, silks, and velvets will excite the admiration of the ladies, especially a display of handkerchiefs, some of which are the property of the Empress of the French.

Music.

Among the musical instruments is a gigantic Saxe horn, whose entire length is 45 feet and diameter 1 ft. 11 in.

Messrs. PALLU & Co., exhibit a fine collection of works in Algerian onyx. The display from Algeria Onyx. and the other French colonies is well deserving of notice, as well on account of its importance as the tasteful manner in which it is arranged.

Grown as well as youthful visitors are much attracted by the several sets of toys, many of them Toys. being imitations of animals that play on various instruments.

Besides some good photographs there is a col- Photographs. lection of anatomical models which will prove interesting to professional visitors. These are in the galleries.

THE ZOLLVEREIN.

The courts appropriated to these States are in the South-Western Transept.

The Zollverein collection present many very interesting objects ; but amongst the most striking of them will be found : first, a systematical collection of mining and metallurgical products, in which Mining. is a column of rock salt from Stastfurd, remarkable for its purity and by its want of hygroscopic water. Minerals.

There is a good display of musical instruments, Music. amongst which is a collection from the orchestra of the grand-duke of Baden. Many specimens of the pianos from Leipsig and Berlin are exhibited, including both grand and chest pianos. There are also harmoniums from Stuttgart.

The GRAND-DUCHY OF BADEN—whose display is Baden. associated with that from Prussia and the Zollverein—exhibits a large display of jewelry and gold from Pfarzheim. There are also a number of clocks from Clocks. the Black Forest—paper, tobacco.

Two bronze lions from Hanover are remarkable for their style and size.

The Fine Arts have amongst the most prominent Fine Arts. features some large cartoons by Peter Cornelius. To architects, some very complete models of the New Exchange at Berlin, the new railway bridge at Deisghau will be interesting. Many other things from the Zollverein States might be named. The

furniture in particular is well worth examination, and is shown by some excellent makers from the Zollverein States. The mineralogical collection is the most complete in the exhibition.

Prussia.

PRUSSIA.—In the production of iron and machinery the most striking are the collection of cast steel products by Krupp, of Westphalia. A cast-steel cannon by Berger, of Haerde. A locomotive, exhibited by Borseg, of Berlin. Railway-carriage, from the manufactory of Pflug, of Berlin. And two trams for underground work, by Friedrich. Sets of tool machinery are exhibited by Egels, and a machine for sharpening needles, by Greff.

Apparatus.

Vacuum apparatus of Heckman, Berlin. Telegraphic apparatus, by Siemens of Berlin. Pantographs, printing-rollers, and copper-plates, are shown by Bialon and Wagner.

Clothing.

Amongst the articles for clothing, &c., will be found specimens of silk, manufactured at the Prussian, Crefeld, and Bülefeld manufactories.

Leather.

Collections of woollen and worsted goods are shown from the chief manufacturers in Prussia. Leather and its productions are exhibited from Frankfort and Berlin; amongst which are leather dressing-cases and other leather articles.

Metals.

The precious metals are well illustrated, the most interesting perhaps being the Berlin silver wares, in which will be seen the presents made to the Princess Royal, on the occasion of her marriage with the Prince of Prussia.

Amber.

Specimens of amber-ware sent from the Baltic provinces in Prussia will be found of great interest.

China.

Porcelain manufactures are exhibited by the chief Berlin firms.

Ornamental castings are sent from the iron foundries at Berlin and Stolberg.

A collection of printing articles and process from Berlin, Brunswick, and Frankfort will be found to be interesting. There are also globes and maps.

WURTEMBERG.

The position of the Court devoted to the produc-

tions from Wurtemberg is in the Eastern division of the South-Western Transept.

The mineral produce of this state is shown, the most remarkable being mineral salt, found in layers of 80 feet in thickness. Fine samples of iron. With these are associated specimens of Roman and Portland cements and joiners' lime. Mineral produce.

As examples of other raw materials produced in this state, there are samples of the different kinds of Wurtemberg wool and silks. The textile manufactures of this state are illustrated by woollen stuffs, blankets, cloth, and hosiery, linens, damasks, curtains, and stays, of which Wurtemberg exports about 10,000,000 annually. There is a series of agricultural implements, and an interesting set of models, showing the improvement in the construction of ploughs from the earliest times, exhibited by the Agricultural Academy at Hohenheim. Wools. Silks.

The collection of books and paper will prove of much interest to many. Books.

The metallic manufactures are illustrated by cutlery, garden-tools, and carpenters' tools, while jewellery, clocks, toys, bone and ivory goods form an interesting group. The production of colours shows an advanced state of chemical knowledge. Tools.

The sparkling wines of the country are also exhibited. Wines.

BAVARIA.

The Bavarian collection is placed in immediate connection with the Baden Court. This country exhibits cut glass, bronze powder, leaf metal, black and coloured pencils and leads from Nuremberg; tinted papers, oil-colour prints, photographic portraits, size of life, by Albert of Munich; wind instruments, chemical colours, wines and hops, plated wire wares from Nuremberg and Fuhrt. A few examples of brown coal and other minerals are sent, together with a Cut glass. Music.

Model of one arch of a new bridge building over the Rhine at Mayence, by Cramer Klet—Scale 1 10, length forty feet. Model.

SAXONY.—The chief portions of the collections

SAXONY.

from this state are in the Gallery touching the French and in the space at the side of the Nave under the Gallery; the rest is scattered about in different parts of Prussia. Pianos, toys, and leathers are under the Picture Gallery, in several places.

Porcelain.

We find under the Gallery next to the Dome and Nave, porcelain, earthenware, and china, and specimens of *painting* on china. This collection will be much admired. The chandeliers are unique in design and of much beauty.

Serpentine
Vases.

There is a good collection of galvano-plastic figures, a group of flowers of pressed leather, and many very interesting serpentine vases.

Books.

The collection arranged in this transept is very miscellaneous, including, specimens of different branches of typography and engraving.

Maps.

Maps, globes, music, and stationery, from Leipzig.

A fine assortment of hosiery and straw plaiting.

Chocolate.

Chocolate and substitutes for coffee from Dresden, and perfumed waters and essential oils, with spirits of wine of highest proof in Germany, 96 per cent.

Music.

Pianos, brass and wood wind instruments; parts of instruments manufactured for the musical instrument-makers. The two branches of manufacture are distinct.

Samples of white marble from the quarries of Furstenberg, near Schneeberg, which have only lately become noteworthy, and millstones, with tin obtained from the mines at Altenberg are amongst the minerals exhibited.

Instruments.

Scales for chemical purposes, weighing jewelry, &c. Hardware and cast steel, manufactured at Döhlen, near Dresden, and electrotypes are also shown.

Stuffs.

In the Gallery devoted to Saxony will be found

Woollens.

Mixed stuffs and woollens, including a complete collection of plaids. Very fine silk stuffs for ladies' dresses; lace and damask stuffs; collections of coloured threads for the manufacture of carpets.

Samples of printing and dyeing from Chemnitz.

At the northern extremity of the Western An-

nex, Saxony has placed a locomotive engine, steam engines, carding and planing machines.

THE HANSE TOWNS

occupy a space to the west of the Zollverein group.

HAMBURG exhibits a trophy of walking-sticks, whalebone, &c. Buck-horn furniture and ornaments, in carved wood. Looking-glasses with wicker-work frame. There are some minerals, a few good chemicals, some well-constructed sewing-machines, many musical instruments, with good examples of hardware. The statue of Arminius is a prominent object.

BREMEN.—This State exhibits ornaments in silver. The wild boar and hounds is finely executed. A few examples of cabinet work, some hardware, and a small number of textile manufactures complete the collection.

LUBECK contributes ropes and wicker-work furniture, and a few unimportant articles.

MECKLENBURG

sends a garden-table carved in stone, and some garden-seats. A selection of furniture, with Parquet flooring. A few rifles, and some wools.

AUSTRIA.

This country occupies the northern division of the Western Transept from the centre of the Dome. The chief things exhibited by Austria are her vegetable and mineral produce. The various descriptions of coal, found throughout the country, are represented by several complete collections, and the coal fields shown by some Geological maps from the Imperial Geological Society of Vienna. Table and rock salts, of which Austria exports 400,000 tons. Mercury, sulphur, and saltpetre from the Imperial mines. Amongst her vegetable substances, grains form an important feature, of which 12,600,000 quarters are annually produced. These also include specimens of woods, flax, and wools. The produce of wool, amounting to 77,000,000 lbs., is well represented, as is also silk.

Austrian
Courts.

Coals.

Maps.

Salt.

Minerals.

Wool.

- There is a large display of wines, of which the annual produce is 412,000,000 imperial gallons.
- Machinery. The machinery of this country is placed at the extreme end of the Annex. Not much machinery has been brought, owing to the distance. A locomotive for mountain use, with four cylinders, with a computed power equal to 90 English miles per hour.
- Music. The musical instruments are very fine, the Viennese makers being celebrated. There will be twelve fine pianofortes, besides various other instruments. The towns of Brünn and Reichenbach will show the improvements made by them in woollen stuffs and cloths, since 1855, when they exhibited with distinction at Paris.
- Cutlery. There is a collective exhibition of Cutlery, besides tools, &c. Works in leather, stationery, and cabinet work, also appear. Paper will attract attention on account of its cheapness. The Bohemian glass will prove one of the most attractive collections in the Exhibition. The Ministry of Public Education exhibit a series of works showing the state of the education; also, the result of the "Novara's," voyage round the world. Some beautiful anatomical preparations by Dr. Hyrtl, and the representation of human growth by Dr. Lickarzick.
- Books.
- Western Annex. Leaving the Western Transept, we enter the Annex.

MACHINERY IN MOTION.

The length of this Annex is nearly 1000 feet, and its width at the widest part 200 feet, at the narrowest 150 feet.

The order of arrangement adopted is as follows :

1. Marine engines.
2. Machine-tools and wood-working machines.
3. Printing and looms, with cotton and wool-spinning machines.
4. Flax-spinning and weaving.
5. Sugar-mills and vacuum pans.
6. Brick and ice-making machinery.
7. Hydraulic engines, pumps, and Blowing machines.

On the eastern side of this Annex will be found

Railway Appliances, Class V., and small machinery and steam hammers.

In this synoptical view it is only just possible to point attention to this display of British mechanical skill. Descriptions of the machinery must be sought for in the *Handbook*.

The marine engine of Penn and Sons—which is Marine engines. not entirely complete—those of John Scott Russell, —the three cylinder surface condensing engines; the models exhibited by Ravenhill, Salkeld and Co., and the engines of Maudslay—all of them especially adapted to screw propulsion—are fine examples. Todd and M'Gregor of Glasgow exhibit a pair of direct acting, inverted cylinder marine engines, which have many points worthy of attentive examination. The striking features being—the two cylinders working vertically over the crank shaft, and thus economizing width—which in the narrow hold of a ship is a point of great importance.

Rennie and Sons are also exhibitors of a high Rennie's engine. and low pressure marine engine. These are direct action screw engines, working steam expansively. There are numerous improvements introduced, and when fitted with proper boilers—apparatus for superheating the steam—and feed-water heaters, they may be worked so economically, that, we are told, not more than 2lbs of coal will be consumed per indicated horse power.

Machines for scutching, carding, combing, drawing, roving, spinning, and the other operations for preparing Cotton and Flax, form a fine collection.

The Machine Tools are next in order, and may be Machine tools. grouped as—

Boring-machines, in which the motion of the Boring machines. cutter is circular.

Shaping-machines, combining the circular cutting Shaping-machines. motion of the lathe with the rectilinear action of the planing-machine.

Drilling-machines, in which the tool has two cut- Drilling-machines ting edges inclined to each other at an obtuse angle—the work to be operated on being placed on travelling tables.

These will be sufficiently indicated as will also engines and models of engines for pumping, and other purposes.

Blowing-engines.

The pair of blast engines exhibited by the Lilleshall Company will be regarded as fine examples of the description of engine employed in blowing air into our blast furnaces.

Printing machines.

Printing-presses, of the American and English type, follow.

Looms.

Looms of various kind, embracing all the recent improvements, and showing that high degree of finish which peculiarly characterizes this class of English machinery, form an interesting and, when in operation, always an attractive series.

Spinning machinery.

Spinning machinery is necessarily connected with these. It will be found along the eastern side, and some in the central arcade.

The machines used in spinning cotton into yarn are shown in variously graduated systems of arrangements, having for their object, the cleansing, sorting, and twisting of the fibres of the raw cotton.

Sugar-mills and vacuum pans.

The Sugar-mills and vacuum-pans are striking examples of the power which is applied to this manufacture. It will be seen how the required pressure is brought to bear on the cane, and the nice contrivances which are introduced for regulating this. The vacuum-pans may be briefly stated to be arrangements by which the air is removed from the surface of the syrup, so that its evaporation is effected with more rapidity, and at a lower temperature than would be otherwise possible. The arrangement of triple-effect vacuum-pans and air-pumps, as made for the Prince Halim Pacha, is of exceedingly ingenious construction.

Brick-making machines.

Brick-making machines present many features of considerable ingenuity. They are constructed in most cases to receive the clay from the pug mill where it is first comminuted—this clay is passed into the moulds in which it receives form, and is subjected to great pressure, after which it is delivered as a finished brick, waiting only for the operation of firing.

The hydraulic engines and models of hydraulic machinery are of a striking character—Sir William Armstrong's applications of hydraulic power to cranes—which are in use at the London Docks, Quay-side, Newcastle-on-Tyne, and elsewhere—and for opening and closing dock-gates are shown; as nearly all the working parts are exhibited, it is easy to study the principles of action.

Hydraulic engines.

Hydraulic pressure, applied to various purposes, such as lifting-jacks, packing machines, oil-crushers, and several kinds of presses may be studied in this class.

Hydraulic presses.

Gwynne & Co.'s centrifugal pump, throwing its large volume of water, depends, as its name implies, on the tendency of bodies, in rapid rotatory motion, to fly off at a tangent to the direction of motion. By the very rapid revolution of the blades of the enclosed fan, the water, which flows into the centre of motion, is thrown off outward and forced up the rising pipe. Pumps of a similar description, on Appold's principle, are exhibited by Easton, Amos and Sons. The larger pump is capable of delivering 100 tons of water per minute, at a mean lift of six feet.

Centrifugal pump.

Appold's pump.

A chain-pump is exhibited by John U. Bastier, similar to one which has been employed in Devonshire in raising water from 110 yards.

Chain-pump.

Turbine wheels are also exhibited.

Turbines.

Attempts are still making to bring the hot-air engine, or Ericson's caloric engine, into practical use. We find two exhibitors.

Air or caloric engines.

Electro-magnetic engines are exhibited by two inventors.

Electro-magnetic engines.

Brewers' refrigerators.—The advantages of any method by which wort can be cooled quickly in the hottest weather need not be dwelt on. In all the large breweries they are compelled to have some system by which this can be effected. Ingenious contrivances are exhibited.

Brewers' refrigerators.

The importance of ice in tropical climes has led to the construction of various machines, by which frozen water may be, at any time, produced. The machine for making ice by steam, depends upon the

Ice-making machines.

production of cold by the rapid evaporation of ether—the air in the first instance, and subsequently the ether vapour, being removed by a small exhausting steam engine.

Other machines for the same purposes are exhibited; also—

Soda-water machines.

Water-meters.

Fire-engines and escapes, Diving apparatus.

Wine-bottling machines.

Cranes.

Washing machines.

Soda-water machines. Water-meters. Steam-gauges, with Fire-engines and Fire-escapes of several kinds are exhibited.

The diving apparatus, exhibited by Samson Barnett, and which has been employed in raising guns, &c., professes to have many advantages.

We may learn to secure our wine in wrought-iron bins, to wash our bottles, cork and capsule them, by examining Farrow & Jackson's contributions.

Cranes of various kinds—Derrick and others—some of which have done good work within this Building—may be regarded as fine examples of facilities for applying mechanical power.

Washing machines—embracing the mangling and ironing—will not be neglected by those interested in domestic economy. In the North end of the Annex is the machinery from FOREIGN STATES.

Returning, the visitor will enter the Courts devoted to

BELGIUM.

This country occupies a large space at the north corners of the western end of the Nave, adjoining the Western Transept.

Coals and iron.

Iron manufactures.

Marbles.

The mineral productions of this country form a strong feature in the Belgian collection. Their coals and iron, with iron manufactures, are especially exhibited.

There are a considerable number of marbles, and table-slabs, and manufactures from them.

Slates are largely exhibited, and also mill-stones.

Small arms.

The small arms from Liege are a very interesting exhibition.

Looking-glasses.

The manufacture of plate-glass has been carried to great perfection in Belgium. Some looking-glasses

of great size are shown. Two of these will be found in the Nave.

There is also a collection of pianos and wind instruments.

In the Gallery will be found gloves and leather in great variety.

Besides these, Belgium exhibits a quantity of beautiful lace, among which a collar, worked for the Lace. Duchess of Brabant, will excite admiration.

To many, the educational class of the country will be of great interest. In it are collected all the appliances used in the education of children, and the methods of teaching the deaf and dumb.

The cloths from Verviers are also important. Cloth.

HOLLAND.

This country occupies a Court on the north side of the Nave, contiguous to Switzerland.

The more striking features of this Court will be a baldachin of stone, elaborately carved. Works of this character afford opportunities for a development of art. Canopies of this character—in wood, stone, and metal—are common in many continental churches. Baldachin, or carved canopy.

Associated with this is a pulpit, with figures of saints and other ornamentations, and some carvings in wood, for which the Dutch have been always celebrated. Carvings in wood.

Some carriages and a few agricultural implements, form other groups. Woods are fairly imitated in some paint. Carriages.

The colonial produce imported into Holland is well worth attention. Amongst them will be found some remarkable bamboos from Java. These were originally 160 feet high, but have been cut down to 60 feet. Colonial produce. Bamboos.

A considerable collection of woollen goods—blankets, &c., with imitations of Smyrna carpets, furnish good examples of the products of the Dutch looms. Woollen goods.

Mineral productions are not large.

SWITZERLAND.

The Swiss Court is situated in immediate conjunc-

tion with Holland and Denmark, to the north of the Foreign Nave.

Silk.

Among the branches of Swiss industry represented, silks take a prominent part, remarkable for the beauty of their dyes as well as the excellence of the weaving.

Mathematical Instruments.
Fire-arms,

The mathematical instruments from Aran take a prominent part, as well as some electric machines and rifled fire-arms, among which is the rifle recently introduced into the Swiss army.

Pianos.

There are some fine pianos, of which Switzerland now exports considerable quantities.

Watches.

The most considerable branch of manufacture, and that which will attract most attention, is that of clocks and watches, confined chiefly to the towns of Geneva and Neufchatel. This branch includes the manufacture of marine chronometers and the preparation of tools and cutting of precious stones used in the construction of watches, musical boxes, &c.

Jewellery.

Some fine jewellery is also exhibited.

Wood carving.

Among the most pleasing exhibitions is the wood carving, which, originally confined to some shepherds and hunters, has become one of the chief articles of commerce.

Wood.

Switzerland also sends some specimens of different woods used in the manufacture of inlaid floors.

Raw produce

There are specimens of raw produce, such as horse-hair, hemp, flax, and straw, the latter of which is manufactured into various articles at Freiburg and in the Canton of Aargau.

Minerals.

There are a few specimens of mineral produce.

Feathers.

Mr. G. Roos, of Lausanne, sends some fine specimens of articles made of the feathers of water-fowl, such as muffs, &c.

DENMARK

Drinking-horns.

exhibits, among a display of furniture, pianos, and hardware, some handsome jewellery from antique designs. The drinking-horns are amongst the most beautiful things in the Exhibition.

Besides this there is a collection of furs and costumes from Finland: among them a mat made the skins of silver foxes will attract universal ad-

miration. A small equestrian statue of the King of Denmark is also deserving of notice. Surgical instruments are well represented.

SWEDEN AND NORWAY.

The Swedish Court is situated to the west of Russia, running from the Nave to the northern wall of the Building.

The important feature of the collection sent is the mineral productions. From Dannemora and the other iron mines of that country, there are fine examples of the magnetic and other ores from which the long-celebrated Swedish iron is manufactured. From the forges and foundries we have the Swedish pig, and every variety of manufactured metal, from cast-iron stoves up to fine cutlery and other examples of Swedish steel. The zinc mines of this country have, of late years, attracted much attention. From them some large samples of the ores have been sent. Copper ores are also exhibited, showing the high mineral character of this country.

There are several examples of silver manufacture, and of plated articles.

Rough woods, in log and plank, show the nature of the forests of Northern Europe; and these are followed by a considerable variety of worked woods, and of inlaid furniture.

Flax and hemp, with manufactures from them, as linen, and some fine examples of ropes. Cotton, silks, and woollen and mixed silk stuffs show the nature of these branches of industry in Sweden.

Skins, leather, furs, hair, feathers, and manufactures associated with them, form a very interesting and instructive class.

The earthenware well deserves attention.

The collection of seeds produced within the Polar regions, which are shown in the Northern Gallery, are equally interesting to the naturalist and to the general public.

RUSSIA.

The Russian Court is situated on the north side of the Nave, immediately following Sweden and next

to Turkey. Against the north wall is a fine mosaic. The columns, &c., in jasper and malachite, are of a fine character; and some vases of the latter are singularly beautiful as specimens of this ore of copper. Carvings in wood, carriages, and sleighs are also exhibited.

Jewels. In this court is an elegant display of jewellery and works in precious metals, besides some ornamental bronze statuettes, which display great art and finish.

Vases. The Russian trophy in the Nave is one of the most interesting exhibitions in the building. It consists of some elegant vases and candelabra, a bronze statue of the Empress Catherine, and relief imitations of fruits and flowers in precious stones. A casket, with representations of currants, raspberries, and grapes is the finest of these. Some cases containing specimens of very fine plumbago from the graphite mines of Siberia are deserving of notice. The specimens have been cut to show in the most advantageous manner the high polish of which it is capable. The chief case is surmounted by a bust of the Emperor of Russia.

Graphite.

Besides the above, there are collections of tallow, cereals, leather, cloths and woollens, with some photographs and medical instruments in the Galleries.

TURKEY

Carpets. exhibits a splendid collection of lace and embroidered oriental silks, with veils, &c. Carpets, for which this country is celebrated, form an important display in this court. There are stems of pipes and mouthpieces of amber, the former of the much-prized Hungarian cherry-wood, and the latter of great value on account of their purity. One of these is valued at upwards of 400*l*. Oriental manufactures in earthen and hard-ware, some marble and other minerals, with vegetable products, show the commercial value of Turkey.

Pipes.

Earthenware.

Minerals.

BRAZIL.

The Brazilian Court is situate on the western side of the Central Avenue, on the north of the Nave;

the entrance being opposite to the case of imports into the Port of Liverpool.

The collection of minerals, though not large, shows the importance of attention to productions of this class. Gold, platinum, and titanium exist. Diamonds, of which several most interesting natural crystals are in the collection, with some other precious stones, agates and iron ores, of which several good examples are sent, with specimens of iron made therefrom.

Galena (sulphide of lead) and the chromate of that metal, copper ores, cobalt, and oxide of tin, are amongst the most important of the metalliferous ores in the mineral collection. Coal of a bituminous variety and anthracitic, from several provinces, looks promising. Amongst the earthy minerals will be found a curious collection of clays, clay slates, alum, shales, limestones, gypsums, &c. The vegetable productions in this class are of great interest, and extensive. It is not possible in this place to enumerate them. The collection of hard woods is of a very remarkable character, many of the woods being of exceeding beauty and certainly of great durability. Pharmaceutical and chemical preparations prove the attention given in Brazil to science and its applications. Starches, sugars, gums, gum-resins, and expressed oils are fully represented.

Alimentary substances of several kinds are shown.

Teas, chocolate, coffees, conserves, &c., in abundance. Rum and other spirits, with many liqueurs and wines. There are a few interesting small machines; one or two exhibitors of agricultural instruments and of arms; some good models of ships; a few philosophical instruments, and some photography, especially portraits of the Imperial family, and of some eminent persons in Rio de Janeiro.

Cottons and flax, with excellent cordage, and some interesting examples of the uses of these raw materials in other directions, will excite much attention.

Amongst the manufactures, glass must be especially noticed. Some of the threaded glass having

much the character of early Venetian. Boots and shoes are excellent in quality and make, and some other leather manufactures are of interest. Candles are largely exhibited, with collections of wax, &c. Some pictures show the character of the Brazilian landscape, and illustrate the peculiarities of the fruit and flowers.

Marbles ;

Woods.

Silks.

The GRECIAN court is chiefly occupied by busts in marble and plaster. Some of these represent their great leaders in the war of independence. Samples of wood carving, which for minuteness of execution rival some of the best in the Exhibition, and some embroidered silks are exhibited and a few minerals.

The SOUTH AMERICAN STATES form a group extending westward from the entrance to the Horticultural Gardens.

PERU.

Minerals.

Cotton.

This country contributes examples of her silver ores and cinnabar; of her nitre and borax, with guano from the Chinca Islands. Grains and wools are also shown. Cotton from Nasca is highly important, as is also cochineal, in the present state of commercial relations. Many of the examples of native manufacture are curious and interesting. The Peruvian wines and liqueurs are new to Europe.

URUGUAY

shows that she produces wool, many good timber trees, some cereals, and minerals.

COSTA RICA.

Minerals.

The government of this state sends ores of gold, silver, copper and lead. Medicinal plants, fruits and fibres, are of commercial value. The few manufactures exhibited show considerable ingenuity.

The round of the building on the ground-floor has been made, and we are again at the entrance to the

HORTICULTURAL GARDENS.

The entrances to the Refreshment Rooms are here.

Spielmann & Co. have immediately adjoining the GREEK COURT one of their FOREIGN MONEY EXCHANGE OFFICES.

PICTURE

GALLERIES.

37

27

THE FIGURES REFER TO THE CLASSES.

27

REFRESHMENTS.

22

28

17

15

13

13

C 36

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BRITISH.

FOREIGN.

21

P PORTUGAL.
R RUSSIA.
R' ROME.
S SWITZERLAND.
S' SPAIN.
T TURKEY.
G GREECE.
Z ZOLLVEREIN.
I INDIA.

18

28

24

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A AUSTRIA.
B BELGIUM.
D DENMARK.
F FRANCE.
H HOLLAND.
I ITALY.
N NORWAY & SWEDEN.

19

20

21

22

23

24

25

26

27

GALLERIES.

PICTURE

PICTURE

CROMWELL ROAD.

The visitor passing up either of the stairs near the Central Avenue reaches

THE GALLERIES.

Foreign
States.

Passing westward, the FOREIGN COUNTRIES already named will be found to occupy spaces in the following order: Greece, Turkey, Russia, Norway, Denmark, Switzerland, Belgium. The Gallery in the Western Transept is occupied by Austria and the Zollverein; France, Spain, Portugal, and Italy occupying the Galleries around the South-Western Courts.

The most remarkable objects in each country have been already named, but the visitor will do wisely to inspect with care the less attractive, but no less interesting, objects in the Galleries.

EGYPT

Egypt.

has here an especial place, with numerous products of great interest; there are antiquities, the presence of which will be excused from their value and beauty. In one of the cases is exhibited a collection of ancient Egyptian jewelry of extraordinary rarity. These are the results of researches carried on by M. Mariette at Thebes, and with one or two exceptions all forming part of the funeral ornaments of Queen Aah-Hoteh, the mother of Amosis, the first King of the 28th dynasty. Her Majesty lived about 1,900 B.C., or 500 years before the time of Moses, which will bring her somewhere about the time of Joseph. Visitors should bear this in mind when they observe the beautiful finish of the workmanship, and the brilliant colours of the stones with which the gold is ornamented.

Egyptian
jewels.

RUSSIA

Russia.

exhibits here many examples of what may be termed her inner life. Domestic economy is illustrated, her clothing and many of her handicrafts exhibited; and here will be found some fine examples of that artistic talent which is further illustrated in the Fine Arts collection.

NORWAY AND SWEDEN

have here a most instructive collection. The

educational appliances are of an especial interest; and advancing to the higher branches, we have some of the best topographical maps to be found in the building associated with valuable statistical details. Models of reformatories and the like are also here.

DENMARK

has also some very finely executed maps and plans, Denmark. with examples of many of her handicrafts. There are lithographs, engravings, and photographs.

SWITZERLAND

does little more than repeat the collection already Switzerland. noticed, and the same may be said of the other countries.

BRITISH SIDE.

CLASS XIII.

PHILOSOPHICAL INSTRUMENTS AND PROCESSES DEPEND-
ING UPON THEIR USE.

Wheatstone's Magneto-Electric Machine for firing Electric mines, blasting rocks, and discharging artillery, fuzes, together with Mr. Abel's fuzes, may be examined as singularly successful applications of the abstract truth of science.

There is a very large display of the latest im- Electric and provements in electric telegraphy, and the exhibitors magnetic of these improvements not only comprise the in- telegraphs. ventors and manufacturers, but also some of the largest telegraph companies, and amongst them the "British and Irish Magnetic," whose controlling clocks cannot fail to be features of interest. With these are associated submarine cables and telegraphic apparatus, and printing apparatus for submarine lines. There is also a very interesting exhibition in this Class by the International Decimal Association, consisting of weights, measures, and coins, illustrative of the metrical system and Metrical current coinage of all countries. system of weights, &c.

Mr. A. J. Hale has invented and exhibits an ingenious little instrument for describing ellipses and other oval curves.

Microscopes. Mr. P. H. Devignes exhibits his microscope, which shows some curious optical illusions.

Messrs. Smith, Beck, & Beck, whose case faces the top of the stairs, have a very extensive display of binocular and single microscopes, telescopes, object glasses, and stereoscopes, also microscopic objects and cabinets, also a museum microscope for public exhibition, with 504 objects so attached as any of them can be seen under these magnifying powers. Microscopes by many other exhibitors, embracing every improvement, will be found in this collection.

Barometers. There is also a very extensive exhibition of barometers, by Negretti & Zambra, Newman, and the most eminent makers.

Mr. Pillischer, of New Bond Street, exhibits a self-registering barometer with a clock movement, and as the clock strikes the hour, a black dot is imprinted on paper, showing the course of action of the atmospheric pressure.

Photographs. The transparent celestial photographs, including those of the solar eclipse taken in Spain, July 18, 1860, by Warren De la Rue, are amongst the most remarkable productions of modern science, developing to us peculiarities connected with intense physical action going on upon the sun's surface, which was scarcely believed before the sun was thus made to print a record of its real phenomena.

Polarization. The illustrations of the effects of polarized light exhibited by W. H. Darker, exhibit some striking optical phenomena.

An apparatus for printing the vibration of strings, by J. H. Griesbach, will command attention.

Another ingenious and useful invention called the neptelescope, an instrument for observing the direction in which the different strata of clouds move, is exhibited by C. E. Bagot, of Dublin.

These things are grouped with many others of great utility and interest, which cannot be described here. Ship and other telescopes, sextants and theodolites, illustrations of the mode of grinding glass for optical purposes, balances of the most per-

fect construction, may be named as showing the variety of the contents of this Class.

CLASS XVII.

SURGICAL INSTRUMENTS.

In this class of manufacture there are many fine cases, which well represent all the improvements made during the last eleven years.

Those in dental surgery are most remarkable. Dental surgery. A case is shown illustrative of this by J. Errard, J. Faulkner, and others. Improvements in orthopædic surgery are well illustrated. Chloroform inhaler, hydrostatic and spring-beds, and lifts for invalids, are shown; and some interesting instruments for microscopical preparations. Vulcanized chemical and surgical apparatus are new.

E. Rimmel exhibits an aromatic disinfectant for hospitals.

CLASS XV.

HOROLOGICAL INSTRUMENTS.

This very interesting Class follows. Since it is not possible to do justice within a very limited space to the large amount of mechanical skill and superior workmanship displayed, all notice is deferred until it can be properly dealt with in the *Handbook*. Clocks and watches.

CLASS XXXVI.

TOILET, TRAVELLING, AND MISCELLANEOUS ARTICLES.

This Class is situated near the philosophical instruments. In it we find exhibited all descriptions of dressing-cases, travelling bags, and despatch boxes. These are not things which admit of description; attention can therefore be pointed only to the exquisite finish and elaborate workmanship of most of the articles exhibited. Dressing-cases.

The Sub-Class which is devoted to travelling apparatus exhibits an equal if not a greater amount of ingenuity.

CLASS XXVIII.

PAPER, STATIONERY, PRINTING, AND BOOKBINDING.

Paper stuff. Entering the paper court, from that of horology, in the corner on the left may be seen the collection of Mr. T. Routledge, who shows raw material, *half stuff*, and paper made from *Esparto-fibre*, a Spanish grass, giving a tough and suitable material, admirably adapted to the purpose of the paper-maker, who may wish to be independent of cotton rags; an article that at present has not risen in price, as was expected, with the abolition of duty and vastly increased demand for paper.

Stationery. From paper we naturally turn to *Stationery* and the imitation of Nature in one of her loveliest forms, that of *flowers*, so daintily imitated in paper by fair hands, and like bees in this hive, from flowers to wax, and impressions in wax, works holding a debatable ground between the fine and useful arts, partaking largely of the former whilst bound to the latter.

Ledgers. Of *stationery* as it ministers to trade and commerce, the show in ledgers is respectable. Of stationery as it ministers to the frivolities of both sexes, the show of valentines is instructive.

Valentines. In *fancy stationery*, *lace papers* and *valentines* are paramount, and persons unacquainted with the trade can form no idea of the vast sums expended upon decorating paper.

Printing. “*Nature-printing*,” as practised by the late Henry Bradbury, was most successful in the self-delineation of different natural objects, as ferns, feathers, lace, sea-weeds, leaves of plants, &c.; and as such filled its mission, and probably paved the way for the efforts of Mr. George Wallis to obtain pictorial effects by a process of his own somewhat akin.

The new art of “*autotypography*” is a most ingenious attempt to supersede the incised plate of the copper-plate engraver, by making the drawing, as it were, engrave itself.

Chromatic printing in all styles has of late years made great progress; in fact it may be said to have

sprung into existence since the last International Show of 1851, though in principle old.

Such are a few of the more remarkable things to be inspected, to which must be added the examples of binding which are exhibited in almost infinite variety. Binding.

CLASS XVIII.

COTTON.

This Class is situated in the Cross Gallery running south from the Nave. The articles by far the most beautiful in this Class are the embroidered or sewed muslins, mostly Scotch work. Some of the patterns are very elaborate and delicately fine, in babies' robes more especially; but there are some beautiful dresses, and in several cases are remarkable specimens of embroidery in handkerchiefs, collars, cuffs, &c. After seeing the worked muslins, we come to several cases of cotton in all sizes and shades, and for various uses, contributed by the principal sewing cotton manufacturers. In Case 3652 may be seen the different stages through which the cotton has to pass before it is fit for use, either for the machine or the hand-needle. There is also a case of prepared cotton thread for the manufacture of ribbons, gloves, elastic fabrics, &c. Embroidered muslins.

In woven cotton fabrics, calicoes form the largest portion of this Class; they may be seen coarse or fine, stout or thin, in fact, of every quality, and as most of them are in glass cases, there are books of specimens for the visitor's own inspection. Towels, counterpanes, muslin curtains, coutils for stays, dimities, nets, and all the varieties of cotton goods are here exhibited. There is also in this Class a case (3678) of velvets and plushes, some entirely cotton, others with a silk face and cotton back. Calicoes.

CLASS XXIII.

WOVEN, SPUN, FELTED, AND LAID FABRICS, AS SPECIMENS OF PRINTING OR DYEING.

This Class is scarcely so well illustrated here as it is in Class II., which the reader should refer to.

CLASS XXIV.

TAPESTRY, LACE, AND EMBROIDERY.

This Class follows Cotton in the Cross Gallery, well marked by the stained glass exhibited around it. The cases of magnificent lace demand equal attention, their contents are all so exquisite and beautiful. In passing from Class XX. to this Class we first come on cases (4383) and (4409), containing Irish laces, in “*guipure*,” “*appliqué*,” “*crochet*,” “*tatting*,” and “*point*,” of their own peculiar manufacture and pattern; also three dresses of Brussels lace pattern and lace point.

Irish laces.

Honiton lace.

The Honiton lace is exhibited in large quantity as collars, handkerchiefs, flounces, which last articles are very costly: one with a guipure border of a drooping fern design is as high as 200 guineas. The Spanish and Norwich lace shawls demand notice, and also the imitation Valenciennes lace; some being so close an imitation of real, that one can scarcely detect it by merely seeing it. The other imitation laces are very wonderful, they are shown with the real in some cases, and only a well-practised eye could detect the difference. These imitations include Honiton, guipure, point, &c.

Shawl.

Amongst the specimens of embroidery is a shawl (4401), which is worked by hand, and the pattern is groups or sprays of flowers, as beautifully shaded as any painting. Another piece of elaborate embroidery is a chess-table worked in silk; on the black squares are the arms of the principal European nations and their flags, all worked with the needle by hand.

CLASS XX.

SILK.

Silk.

In the South Gallery, extending onward against the wall of the British Picture Gallery, will be found a large collection of Silks. Many of these are deserving of especial notice for the elegance of design and the richness of colour. A considerable advance may be observed in many of the groups of flowers—their correctness showing a very careful study of nature. Some beautiful *moiré* antiques are exhibited. Amongst

them may be noticed a silver-grey moiré, which is made of silk and solid silver thread woven together, which combined has a very striking effect. The figured chené silks exhibited are very chaste and elegant. There are several varieties of velvet, both silk and union patent velvets, also plush manufactured from silk waste. Several of the ordinary plain silk and “*glacés*” are woven by the steam-power loom: those in Case (3856) are thrown into “*organzine*” in two operations from China cocoons, and into “*tram*” in one operation. One Case (3886) is interesting, as it contains specimens of silk in its different stages, from the silkworm in the cocoon to the manufactured article, and each specimen is numbered so as to be easily understood. Glacés.

There are some very beautiful examples of furniture silks, amongst which is the novel material *tissue de verre*, exhibited by Grant and Gask; it consists of the pattern being of very fine spun glass woven into the silk ground, and it produces the same rich effect as the embroidery in gold thread to be seen in the Italian Court. It appears to be very flexible. The skeins of glass thread which hang in the same Case, and is the same as used in the furniture, illustrate this. A great variety of silk handkerchiefs, cravats, scarfs, &c., are shown in this Class, but nothing of rarity, so we will pass on to the ribbons and trimmings, of which a great variety are exhibited. These reflect great credit on the Coventry manufacturers, both for their quality and the beauty of design. Many of the ribbons are adorned with groups of elegant flowers and floral patterns; but there is another variety of ribbon of which the novelty consists more in its peculiarity than its beauty: in this portraits are introduced. These being woven must require great nicety and precision, as well as attention in the process of making. A different style is exhibited in some other sash ribbons, which have the legend of the Lady Godiva in the illuminated Old English style woven in it. Trimmings for dress and carriage fringes, different kinds of sewing silk and twist for sewing machines, a few satins, and the various kinds of mourning silks conclude the list of articles in this Class. Furniture silks.
Ribbons.

CLASS XIX.

FLAX AND HEMP.

Ropes.

Nets.

In this Class are to be seen the different kinds of linen, damask, &c., which are woven for home consumption and for foreign use, both in the bleached and unbleached state. Ropes and twines are included in this Class; the different varieties of sewing cotton, also sail-cloths, tarpauling, sacking, and fishing-nets come under this head.

CLASS XXI.

WOOLLEN AND WORSTED, INCLUDING MIXED FABRICS.

This Class extends from COTTON in the South Central Gallery, round the Cross Gallery running South, and joining FLAX.

To attempt to give a list of the various fabrics here exhibited would occupy so much space that we take out a few groups of the more important only.

Cloths. }

Cloth occupies a large space in this Class, and it ranges from the finest quality to the coarsest. Fancy and union cloths of every description, including some very beautiful mantle cloths; many in imitation of fur, chiefly seal-skin; a great variety of blankets and flannels, also railway and carriage rugs; indeed all kinds of woollen fabrics used for dresses, such as merino, alpaca, mohair, &c., and furniture damasks, reps, &c., are exhibited.

Irish poplins.

Amongst the higher class of mixed fabrics the Irish poplins stand high; many are very beautiful. In Case (4029) is one the pattern of which is designed from snow-crystals. By many this novelty will be admired, and the infinite variety of forms presented to the eye form an almost inexhaustible source to the designer.

Shawls.

There are a great variety of shawls, amongst which, of course, both for their beauty and texture, the Paisley take precedence.

Tartans.

The Scotch have also contributed very largely to this Class in tartans and many articles knitted by hand, amongst which the Shetland knitting stands pre-eminent. Some of the shawls are so fine that it scarcely seems possible that human hands could have

made them. A Case (3954) of specimens of wool is very interesting, and most of the varieties used in manufacture are exhibited, and another Case (3949) contains specimens of mungo and shoddy from woollen rags. Shoddy.

The introduction of beavers', foxes', and hares' fur into the manufacture of cloth is rather novel, and on that account Case (3950) deserves a little attention.

CLASS XXVII.

ARTICLES OF CLOTHING.

This Class is situated in the Gallery at the south-east angle of the Building.

It is necessarily a most varied Class. Hats and caps Hats. of all kinds are here. Bonnets and general millinery Bonnets. are fully represented. Hosiery, gloves, and clothing in general, are not articles to admit of much description, but they will be found, by many, of much interest. Boots and shoes are here in great variety. Boots.

Passing round the Gallery of the Eastern Dome, the visitor will reach Classes XXXVII. and XXXVIII.,

ARCHITECTURE and ART DESIGN.

This brings him to the coloured glass windows at the north end of the Transept, the Gallery leading him into the section devoted to INDIA. Passing through this interesting collection, which has been already described, and turning to the right hand, there will be found on the walls against the Refreshment Rooms a display of CARPETS and FLOOR-CLOTHS belonging to Carpets. Class XXII. The articles belonging to this Class will also be found under the North-east Gallery, along the Nave, and distributed through the Classes devoted to Furniture.

There are two Classes of interest and importance which have places in the

CENTRAL TOWER.

This will be found over the entrance to the Building from the Cromwell Road; the British and Foreign Picture Galleries extending east and west.

Any visitor who will ascend the stairs will be well rewarded by finding, first—

CLASS XIV.

PHOTOGRAPHIC APPARATUS AND PHOTOGRAPHY.

In this Class, which has 158 exhibitors, will be found the best productions of our most celebrated photographers. Here will be discovered every variety of photographic portrait,—views from the most beautiful spots in our island—showing that England can boast of a landscape unequalled in the world, and faithful reflexes of the scenes in foreign lands which are hallowed by historical and sacred associations. To the photographer himself the apparatus displayed offers many points of exceeding interest. In this locality is

CLASS XXIX.

EDUCATIONAL WORKS AND APPLIANCES.

Books, maps, diagrams, and globes do not admit of hasty description. Here, however, they will be found in great variety. *School-fittings and furniture* are collected here; *toys and games* are illustrated, and the *illustrations of Elementary Science* include many interesting specimens of Natural History. These being studied, we descend the stairs again and reach the

PICTURE GALLERIES.

The BRITISH GALLERIES run eastward from this point; the FOREIGN GALLERIES run westward.

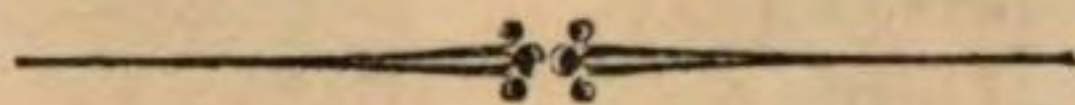
In the HORTICULTURAL SOCIETY'S Gardens stands Baron Marochetti's Model of the Monument erected to Charles Albert, at Turin.

The Fountains by Durene, of cast-iron, 45 feet high, and 53 feet diameter, and that by Barbazat, also of cast-iron, 30 feet high and 53 feet diameter, and several of the French bronzes have place also in these Gardens.

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PATENT

BREECH OR MUZZLE-LOADING RIFLE.



This Rifle will be found to possess the following advantages:—

- 1st.—**Facility and rapidity of Loading.**—The Breech is opened by a single movement, and closed again by the same movement reversed. No fastening is required.
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- 3rd.—**Great simplicity of the Breech-Loading Action.**—The parts are few and simple, and can readily be exchanged, close fitting not being required. The plunger with its connecting link is made to lift out of the chamber in which it works for the facility of cleaning.
- 4th.—**Solidity of the Breech-Loading Action.**—When the Gun is fired the recoil is received on the solid breech of the barrel, as in a muzzle loader. The barrel must burst before any part can become displaced.
- 5th.—**It can be used as a Muzzle-Loader.**—In case a supply of the proper breech-loading ammunition should fall short, it can be loaded at the muzzle with *loose powder* in the usual way, and with a bullet of the same size as that used in loading at the breech.

After 400 shots Breech-loading, upwards of a hundred consecutive shots have been rapidly fired, loaded with loose powder at the muzzle, without the slightest appearance of escape past the plunger, and breech-loading again taken up without impediment, a result which has never before been attained with any Breech-loading Gun; even with a 'proof' charge, which is more than equal to three service charges, the same result has been repeatedly attained.

DIRECTIONS.

To load the Gun, raise the lever. This act draws back the plunger, so that the cartridge can be placed in the chamber in front of it. A return of the lever causes the plunger to push forward the cartridge in a direct line with the axis of the bore, into its place in the barrel. This direct action of the plunger ensures the bullet lying in the barrel in a perfectly true position.

To remove the plunger, bring it opposite to the shot in the chamber, and lift it out.

After using the Gun as a muzzle-loader, care should be taken to clean the barrel before again using it as a breech-loader.

This Rifle is applicable either for Military or Sporting use, and can be made .451 in. bore, or .577 in. The latter size is made to take the ordinary Government Cartridge when loaded at the muzzle.

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Department, 4 St. James's Street, London, and other Gun Makers

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They are unaffected by change of temperature, never crack, and become heated much more rapidly than any other Crucibles. In consequence of their great durability the saving of waste is also very considerable.

The Company have recently introduced Crucibles especially adapted for the following purposes, viz., MALLEABLE IRON MELTING, the average working of which has proved to be about seven days; STEEL MELTING, which are found to save nearly a ton and a half of Fuel to every ton of Steel fused; and for ZINC MELTING, lasting much longer than the ordinary Iron pots, and saving the great loss which arises from mixture with Iron.

The following are a few of the numerous Testimonials which the Company have received:—

'Royal Laboratory, Woolwich Arsenal, March 13, 1862.—In reply to your letter, requesting a Testimonial as to the value of the Patent Plumbago Crucibles, I beg to state that these Crucibles have now been used in this department for melting gun-metal, &c., for upwards of two and a half years, and are found to answer better than any other description. They endure, on an average, from five to six days, and the quantity melted in an 80-lb. Crucible before it becomes unserviceable, varies from 25 to 36 cwt. E. W. BOXER, Superintendent.

'Royal Mint, March 13, 1861.—I beg to certify that the Plumbago Crucibles of the Plumbago Company have for some time been adopted in this establishment to the exclusion of all others, and have been found to be of excellent quality. The original cost is considerable, but in use they are in the end found to be more economical than any other Crucibles, on account of their endurance in the fire and general freedom from casualties. ROBERT MUSHET.

'Wood Street, Cheapside.—Having adopted your Plumbago Melting Pots, which we use to a considerable extent, for the last few years, we are so highly satisfied with their quality that we should on no account think of using any other. We find them more efficient, less liable to break, and a great saving in time. We have much pleasure in stating that they work to our entire satisfaction. 50,000 ozs. and upwards have been melted in one 1000 oz. Pot, and sometimes a larger quantity.—We are yours truly,

'BROWN & WINGROVE, Refiners to the Bank of England.'

'These Crucibles, although dear in first cost, in consequence of being made entirely of pure Plumbago, possess qualities that have never been hitherto approached. I have now used them between two and three years, and must add that I cannot say too much in their praise. Each Crucible runs from 40 to 60 pourings of pure metal, and can with safety be dipped in cold water when at a red heat, and used again immediately, as if it had not undergone any change of temperature. All the Crucibles that I have had last an entire week, and we never have an accident; they literally wear out, &c. &c.

'CHARLES DIERICKX, Master of the French Mint.'

'Royal Mint Refinery, London.—Upon the recommendation of Mon. Charles Dierickx, Director of the Paris Mint, we tried your Patent Crucibles, and have used them for the last three years. We can fully endorse M. Charles Dierickx's published opinion.

'F. T. ARNOULD, for DE ROTHSCHILD & SONS.'

'Assay Offices, 78 and 79 Hatton Garden, London, E.C., October 14th, 1858.—We have much pleasure in adding our testimony in favour of your Patent Plumbago Crucibles, which are superior to anything of the kind we have ever used.—We remain yours truly,

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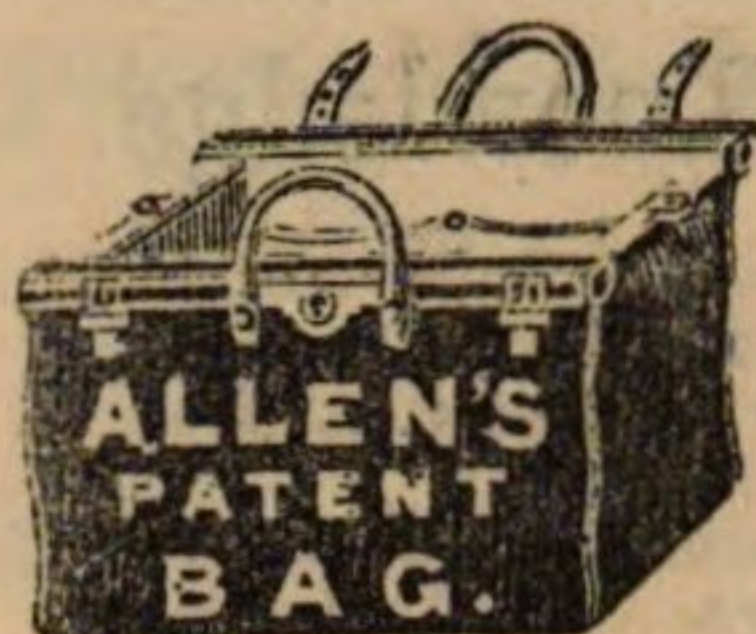
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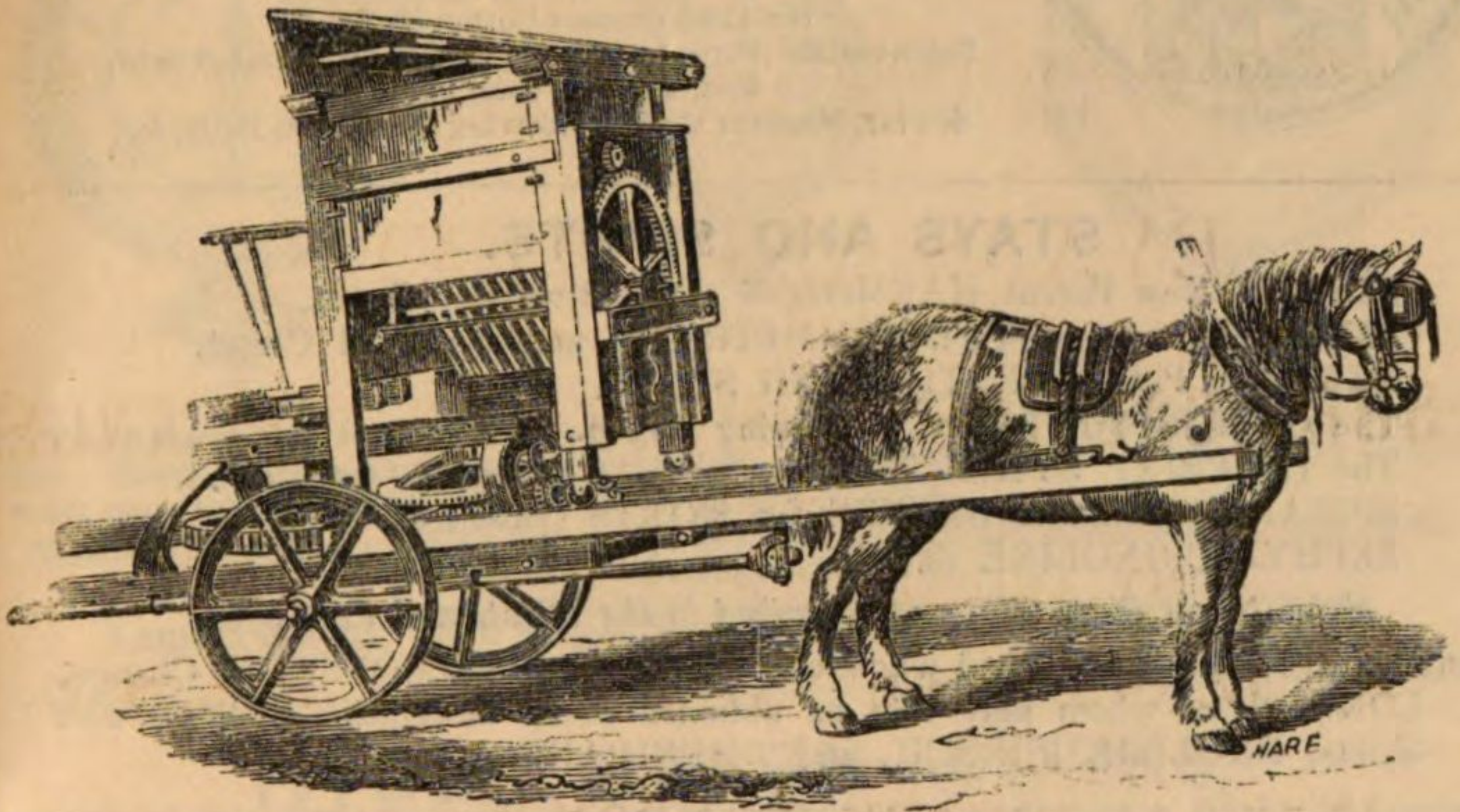
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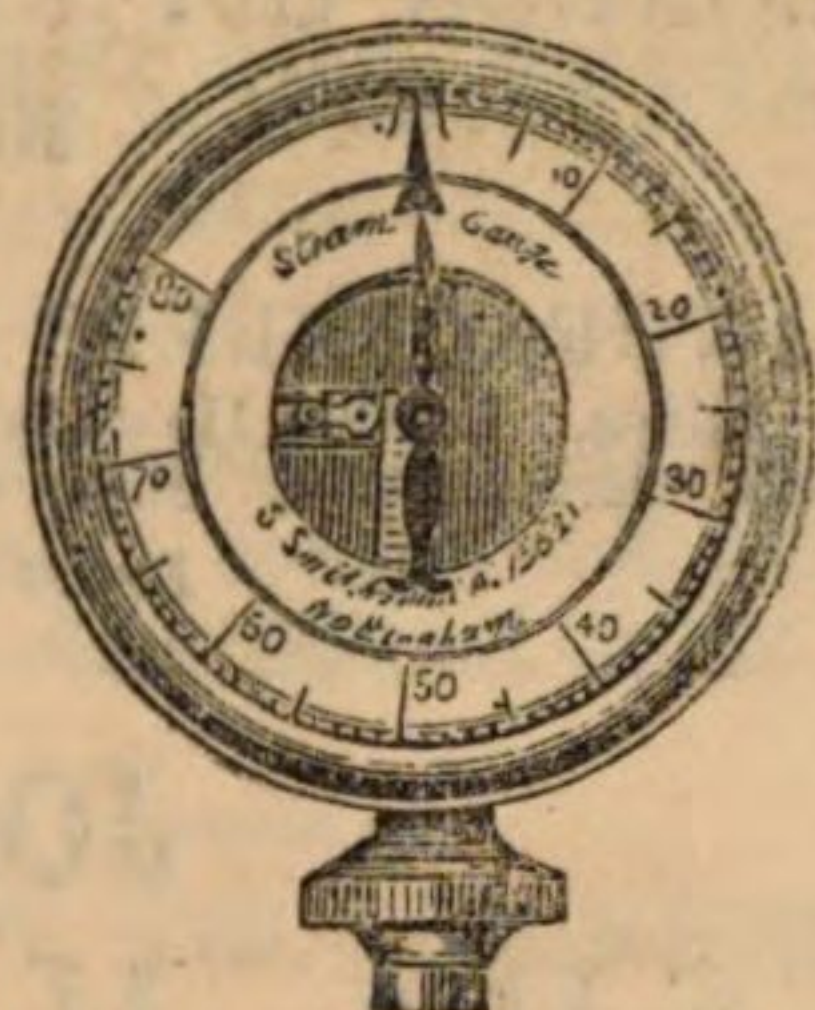
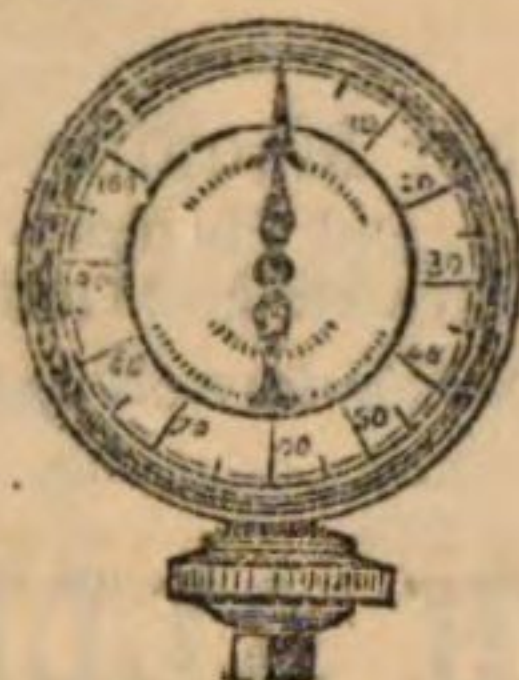
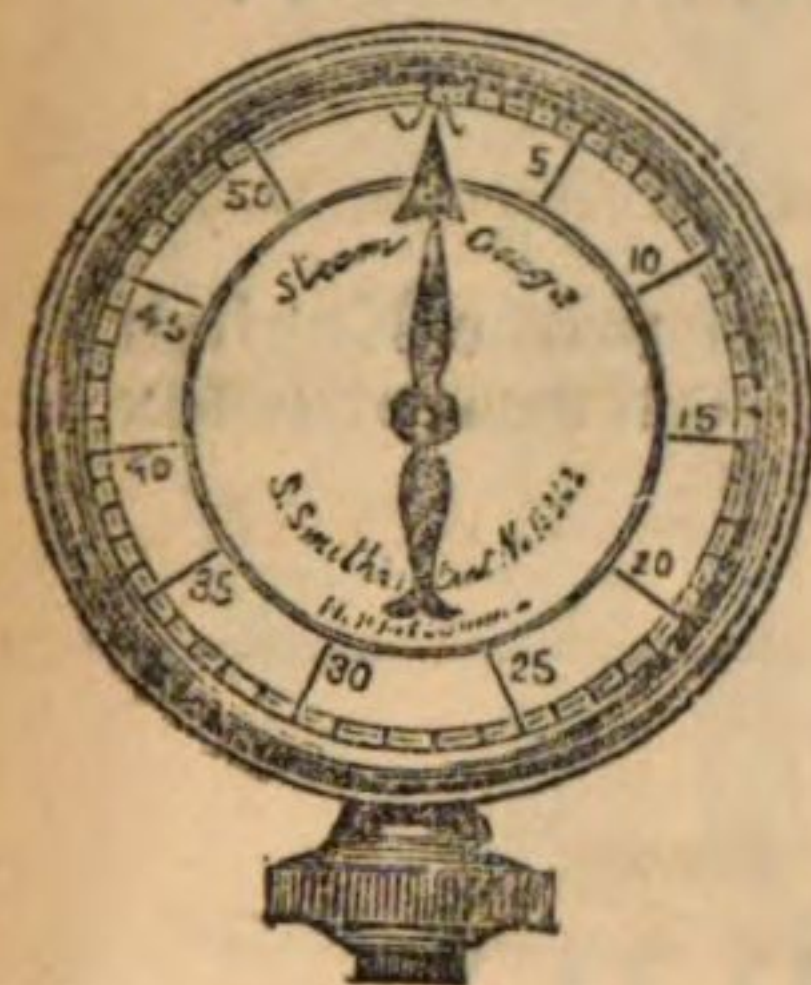
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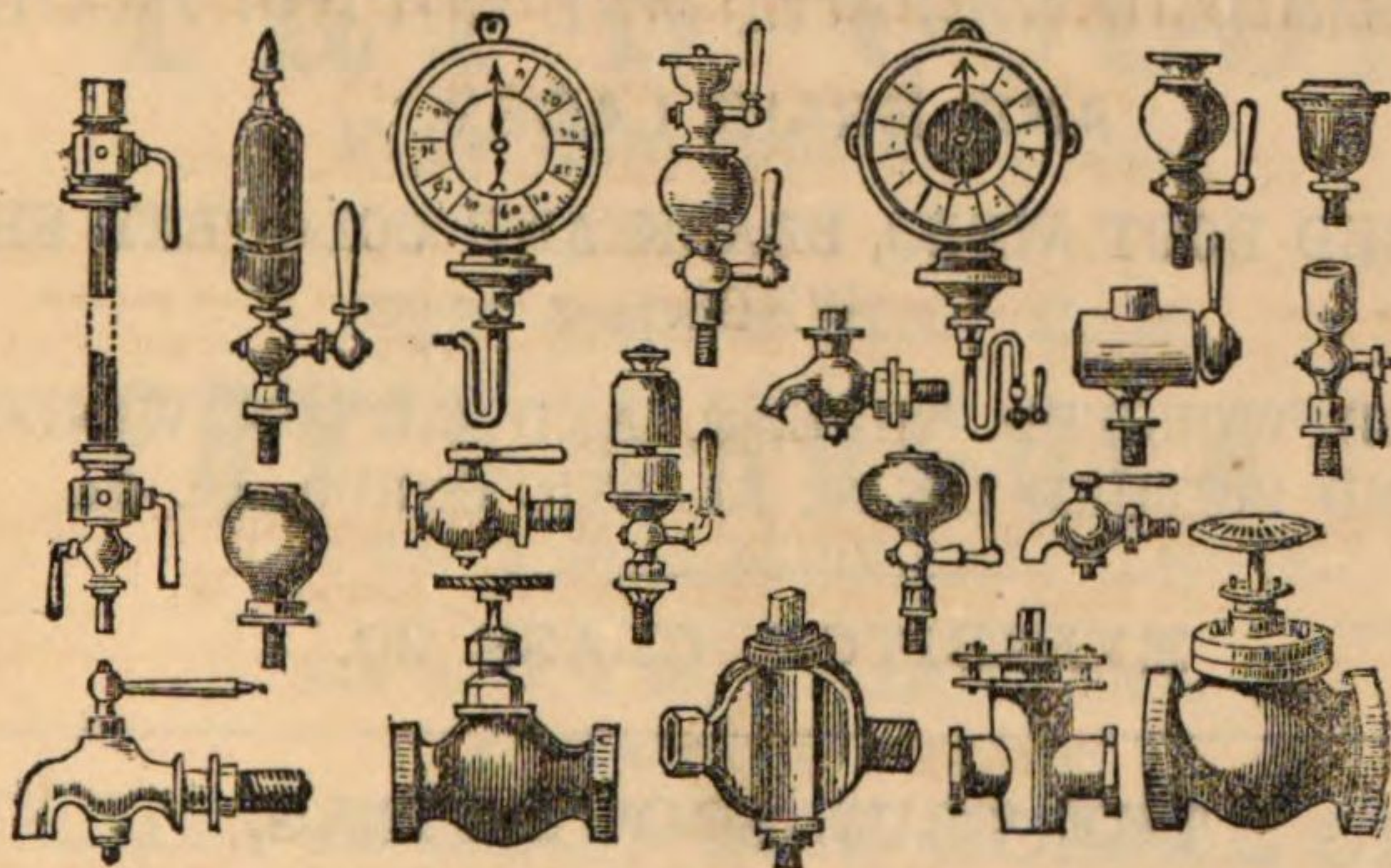


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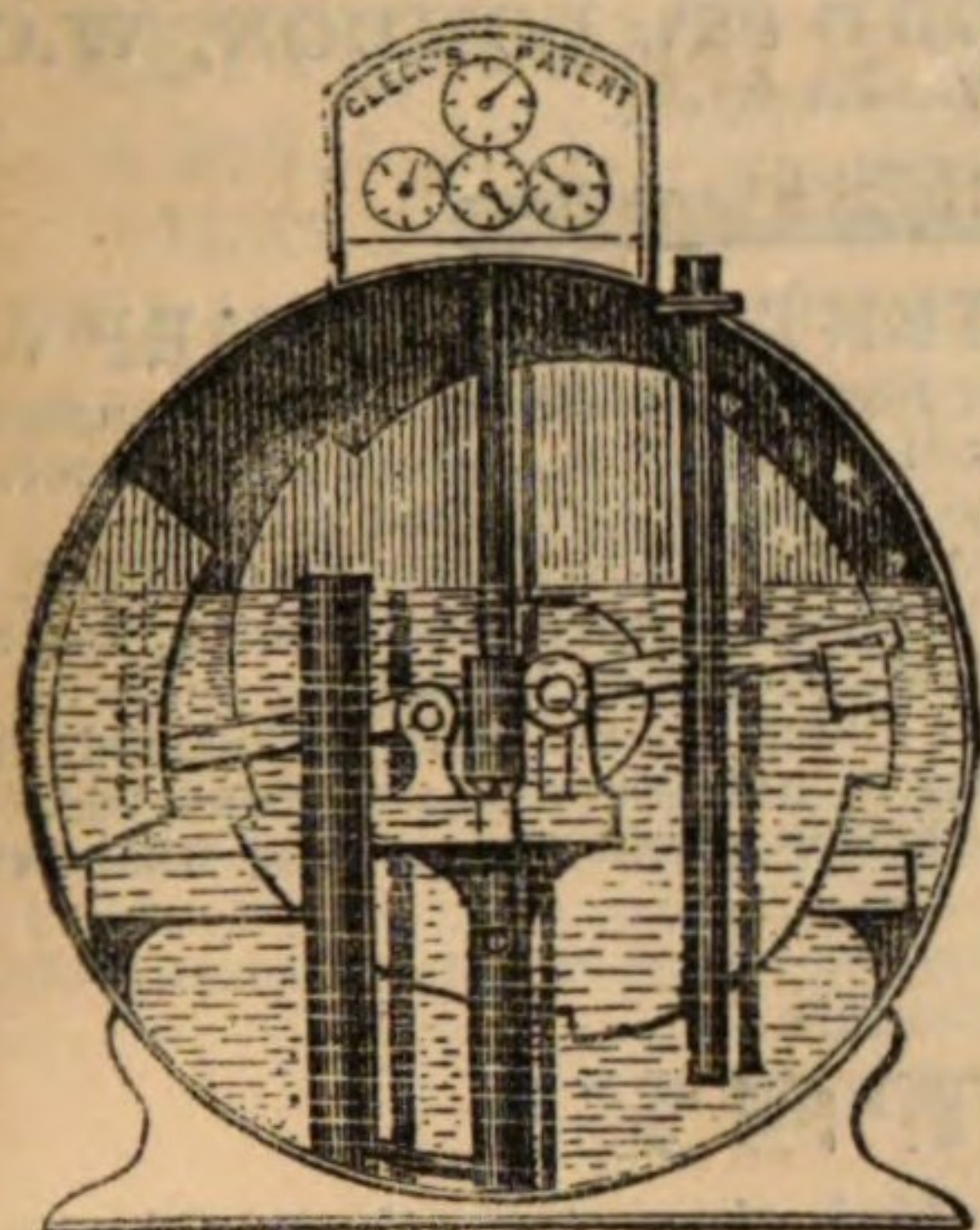
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1855	£130,060	1858	£196,148
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Placing the Company among the very largest Offices in the Kingdom.

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1851	£3378 18 5	1857	£10,270 8 6
1853	5099 19 10	1859	13,086 8 5
1855	5909 18 6	1860	15,079 17 10

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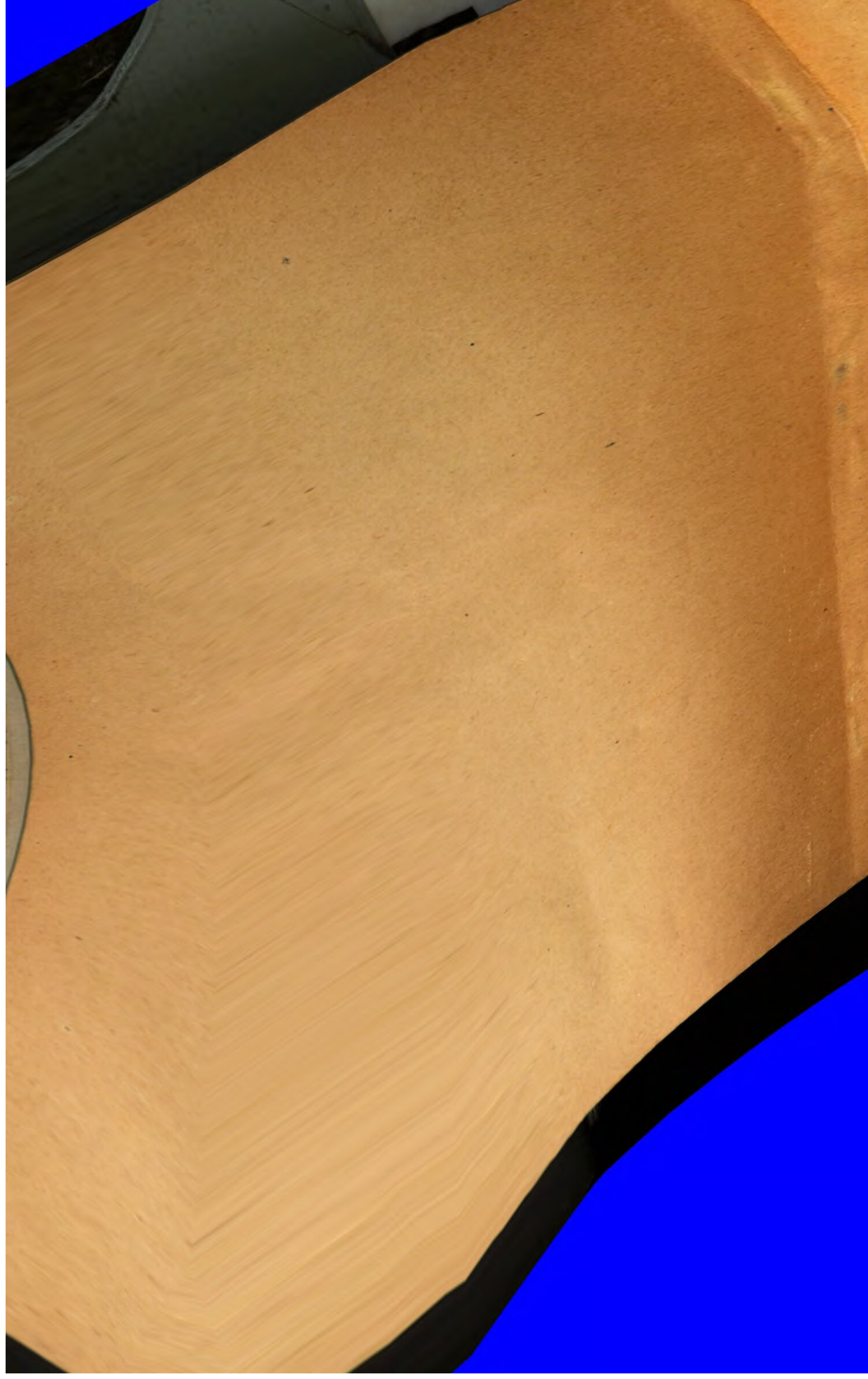
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